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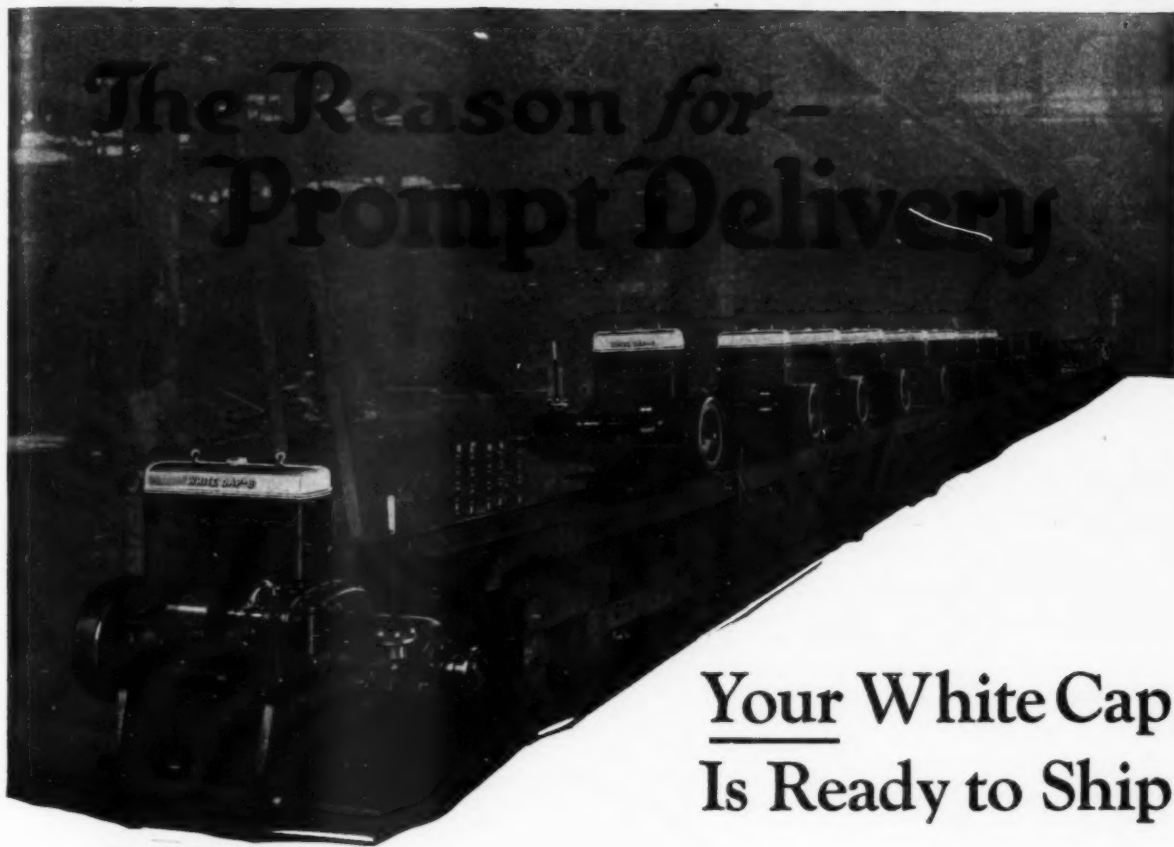
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PETER B. KYNE

Now Writes for

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The Duplicity of Captain Scraggs

*The First of a Series of
Real Sea Stories to Ap-
pear in MoToR BoatinG*

THEY had seen the fog rolling down the coast shortly after the Maggie had rounded Pilar Point at sunset and headed north. Captain Scraggs has been steamboating too many unprofitable years on San Francisco Bay, the Suisun and San Pablo sloughs and dogholes and the Sacramento River to be deceived as to the character of that fog, and he remarked as much to Mr. Gibney. "We'd better turn back to Halfmoon Bay and tie up at the dock," he added.

"Calamity howler!" retorted Mr. Gibney and gave the wheel a spoke or two. "Scraggsy, you're enough to make a real sailor sick at the stomach."

"But I tell you she's a tule fog, Gib. She rises up in the marshes of the Sacramento and San Joaquin, drifts down to the bay and out the Golden Gate and just naturally blocks the wheels of commerce while she lasts. Why, I've known the ferry boats between San Francisco and Oakland to get lost for hours on their twenty-minute run—and all along of a blasted tule fog."

"I don't doubt your word a mite, Scraggsy. I never did see a ferry-boat skipper that knew shucks about sailorizing," the imperturbable Gibney responded. "Me, I'll smell my way home in any tule fog."

"Maybe you can an' maybe you can't, Gib, although far be it from me to question your ability. I'll take it for granted. Nevertheless,

I ain't a-goin' to run the risk o' you havin' catarrh o' the nose an' confusin' your smells tonight. You ain't got nothin' at stake but your job, whereas if I lose the Maggie I lose my hull fortune. Bring her about, Gib, an' let's hustle back."

"Don't be an old woman," Mr. Gibney pleaded. "Scraggs, you just ain't got enough works inside you to fill a wrist watch."

"I ain't a-goin' to poke around in the dark and a tule fog, feelin' for the Golden Gate," Captain Scraggs shrilled peevishly.

"Hell's bells an' panther tracks! I've got my old courses, an' if I foller them we can't help gettin' home."

Captain Scraggs laid his hand on Mr. Gibney's great arm and tried to smile paternally. "Gib, my dear boy," he pleaded, "control yourself. Don't argue with me, Gib. I'm master here an' you're mate. Do I make myself clear?"

"You do, Scraggsy. But it won't avail you nothin'. You're only master becuz of a gentleman's agreement between us two, an' because I'm man enough to figger there's certain rights due you as owner o' the Maggie. But don't you forget that accordin' to the records o' the Inspector's office, I'm master of the Maggie, an' the way I figger it, whenever there's any call to show a little real seamanship, that gentleman's agreement don't stand."

"But this ain't one o' them times, Gib."

"You're whistlin' it is. If we run from this here fog, it's skiffs to battleships we don't get into San Francisco Bay

an' discharged before six o'clock to-morrow night. By the time we've taken on coal an' water an' what-all, it'll be eight or nine o'clock, with me an' McGuffey entitled to mebbe three dollars overtime an' havin' to argue an' scrap with you to git it—not to speak o' havin' to put to sea the same night so's to be back in Halfmoon Bay to load bright an' early next mornin'. Scraggsy, I ain't no night bird on this run."

"Do you mean to defy me, Gib?" Captain Scraggs' little green eyes gleamed balefully. Mr. Gibney looked down upon him with tolerance, as a Great Dane gazes upon a fox terrier. "I certainly do, Scraggsy, old pepper-pot," he replied calmly. "What're you goin' to do about it?" The ghost of a smile lighted his jovial countenance.

"Nothin'—now. I'm helpless," Captain Scraggs answered with deadly calm. "But the minute we hit the dock you an' me parts company."

"I don't know whether we will or not, Scraggsy. I ain't heeled right financially to hit the beach on such short notice."

"That ain't no skin off'n my nose, Gib."

"Well, you can fire all you want, but you won't fire me. I won't go."

"I'll get the police to remove you, you blistered pirate," Scraggs screamed, now quite beside himself.

"Yes? Well, the minute they let go o' me I'll come back to the S. S. Maggie and tear her apart just to see what makes her go." He leaned out the pilot house window and sniffed. "Tule fog, all right, Scraggs. Still, that ain't no reason why the ship's company should fast, is it? Quit bickerin' with me, little one, an' see if you can't wrestle up some ham an' eggs. I want my eggs sunny side up."

Sensing the futility of further argument, Captain Scraggs sought solace in a stream of adjectival opprobrium, plainly meant for Mr. Gibney but delivered, nevertheless, impersonally. He closed the pilot house door furiously behind him and started for the galley.

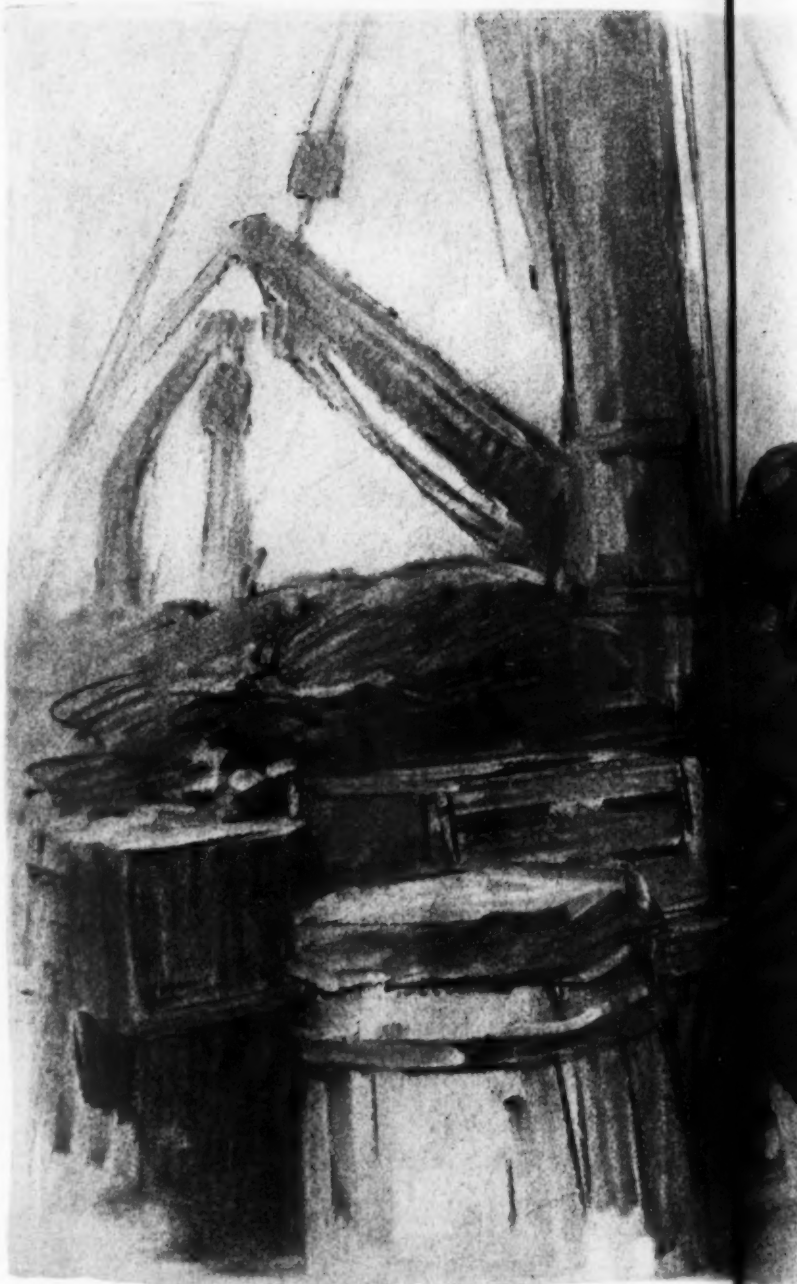
"Some bright day I'm goin' to git tired o' hearin' you cuss my proxy," Mr. Gibney bawled after him, "an' when that fatal time arrives I'll scatter a can o' Kill-Flea over you an' the shippin' world'll know you no more."

"Oh, go to—glory, you pig-iron polisher," Captain Scraggs tossed back at him over his shoulder—and honor was satisfied. In the lee of the pilot house Captain Scraggs paused, set his infamous old brown derby hat on the deck and leaped furiously upon it with both feet. Six times he did this; then with a blow of his fist he knocked the ruin back into a semblance of its original shape and immediately felt better.

"If I was you, skipper, I'd hold my temper until I got to port; then I'd git jingled an' forgit my troubles inexpensively," somebody advised him.

Scraggs turned. In a little square hatch the head and shoulders of Mr. Bartholomew McGuffey, chief engineer; first, second and third assistant engineer, oiler, wiper, water-tender, and coal-passer of the Maggie, appeared. He was standing on the steel ladder that led up from his stuffy engine room and had evidently come up, like a whale, for a breath of fresh air. "The way you ruin them bonnets o' yourn sure is a scandal," Mr. McGuffey concluded. "If I had a temper as nasty as yourn I'd take soothin' syrup or somethin' for it."

Without waiting for a reply, Mr. McGuffey dropped back into his department and Captain Scraggs, his soul filled with rage and dire forebodings, repaired to the galley, and "candled" four dozen eggs. Out of the four dozen he found nine with black spots in them and carefully set them



Illustrated by L. A. Shafer

"Oh, go to—glory, you pig iron polisher,"

aside to be fried, sunny side up, for Mr. Gibney and McGuffey.

Before proceeding further with this narrative, due respect for the reader's curiosity directs that we diverge for a period sufficient to present a brief history of the steamer Maggie and her peculiar crew. We will begin with the Maggie.

She had been built on Puget Sound back in the eighties, and was one hundred and six feet over all, twenty-six feet beam and seven feet draft. Driven by a little steeple compound engine, in the pride of her youth she could make ten knots. However, what with old age and boiler scale, the best she could do now was six, and had Mr. McGuffey paid the slightest heed to the limitations imposed upon his steam gauge by the Supervising Inspector of Boilers at San Francisco, she would have been limited to five. Each an-



Captain Scraggs tossed back at him over his shoulder—and honor was satisfied

nual inspection threatened to be her last, and Captain Scraggs, her sole owner, lived in perpetual fear that eventually the day must arrive when, to save the lives of himself and his crew, he would be forced to ship a new boiler and renew the rotten timbers around her deadwood. She had come into Captain Scraggs's possession at public auction conducted by the United States Marshal, following her capture as she sneaked into San Francisco Bay one dark night with a load of Chinamen and opium from Ensenada. She had cost him fifteen hundred hard-earned dollars.

Scraggs—Phineas P. Scraggs, to employ his full name, was precisely the kind of man one might expect to own and operate the Maggie. Rat-faced, snaggle toothed and furtive, with a low cunning that sometimes passed for great intelligence, Scraggs' character is best described in a homely American word. He was "ornery." A native of San

Francisco, he had grown up around the docks and had developed from messboy on a river steamer to master of bay and river steamboats, although it is not of record that he ever commanded such a craft. Despite his "ticket" there was none so foolish as to trust him with one—a condition of affairs which had tended to sour a disposition not naturally sweet. The yearning to command a steamboat gradually had developed into an obsession. Result—the "fast and commodious S. S. Maggie," as the United States Marshal had had the audacity to advertise her.

In the beginning, Captain Scraggs had planned to do bay and river towing with the Maggie. Alas! The first time the unfortunate Scraggs attempted to tow a heavily laden barge up river, a light fog had come down, necessitating the frequent blowing of the whistle. Following the sixth

(Continued on page 64)

Motor Boat Construction

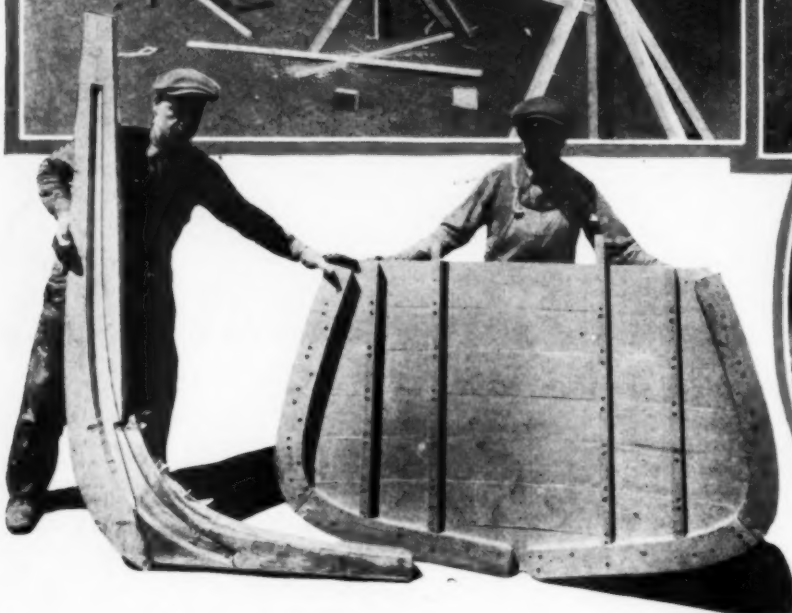
Photographs by M. Rosenfeld, with the co-operation of the Elco Works, Bayonne, N. J.

The First of a Series of Illustrated Follow Through the Many Steps of Laying of the Keel to



A stack of natural growth knees, showing the waste necessary. A knee before and after sawing

The use of power tools is essential to accurate work. An electric drill bores holes through the hard oak keel with great ease. This task would be very difficult and laborious with hand tools



The completed keel is set up on supports and the molds for the various station points assembled upon it. Our picture shows only part of the molds erected

The stem and transom are independently assembled and bolted or riveted together as required. Note the way in which the plank rabbet is carved in the stem

Long timbers for the keel are hard to get. A scarf joint such as this, when carefully made and firmly bolted together, is as strong as one piece of timber without a joint

According To Modern Methods

Descriptions Which Will Boat Building From the the Launching

The transom is set up on the end of the keel member and stayed in place with temporary supports. The next operation on this keel would be the erection of the molds at all stations and their proper alignment



A natural growth knee is let into the stem and securely bolted to it and to the keel. The rabbet line is carved in so that the plank will later fit this groove exactly

When completely assembled, the keel unit is transported from the shop where it was made to the erecting floor where it will be set up on supports as shown on the previous page

English and Italian Craft Compete at Monaco

*First Big After-the-War
International Race Meet*

Onward IV, one of the British entries built by Thornycroft and equipped with 250 h.p., finished second in the open class with a speed of 33.5 miles

Baglietto II, an Italian speedster, is powered with a 30 h.p. Italian engine and fits in the 1½ litre class. Her record for 50 kilometers or 31 statute miles is 23 m.p.h.

Another Italian entrant, Cantieri Baglietto, fitted with two 100 h.p. engines, winner in a class termed racing cruisers for the Monaco trophy. Course of 24.85 miles covered at the rate of 35 m.p.h.

Baglietto I, the winner in the 1½ litre class (92 cu. in.), powered with 40 h.p., covered the 31 mile course at the rate of 27.3 miles, fast for a small engine

Vienna, one of the contenders in the open racer class, made a great effort to win, but carried away her steering gear. Her engine is of 350 h.p.



G. W. Littlehales, of the Hydrographic Office, the originator of the new navigation.

Chap Says

That in the Matter of Navigation Columbus Couldn't Have Passed the Examination for Third Mate of a Coal Barge. But He Had Self-Confidence—and He Discovered America

I ONCE heard the story of a Carlisle Indian who was taking instruction in the theory of gasoline engines. After the professor had shown him the working parts of a four-cycle motor and explained the principle of suction, compression, combustion, and exhaust strokes, he asked the Indian if he understood what it was all about.

The Indian nodded gravely and declared that all was as clear as light—all but one little thing.

"And what," asked the professor, "is the part that stumps you?"

Said the Indian, "What makes the engine run?"

Students of navigation who haven't read Dean Potter's articles sympathize with the Indian. They understand all about the theory, but they ask, "How do you know where you are? I never could trust my judgment in such an important matter."

Now, every man who reads this article of Mr. Potter's knows more about navigation than Columbus did—and yet Columbus discovered a new world. The Great Admiral didn't know where he was going, and had no charts to get him there, and couldn't lay a straight course—but by keeping in the general direction of West he struck America.

This is a thing for embryo navigators to think about. It wasn't what Columbus knew that landed him in the Hall of Fame. It was his two qualities of resolution and self-confidence. Even if he had set out from Palos with sextant and chronometer under one arm and a 1923 edition of old Nat Bowditch under the other he wouldn't have reached as far as the Canaries without tenacity of purpose and faith in himself.

Of course, there's a little more to modern-day navigation than self-confidence. But every advance of science widens the scope of human knowledge and smoothes out the difficulties of obtaining it. A knowledge of trigonometry is no longer necessary, and the logarithmic principle may remain Greek to the uninitiated. And now with the new method of Littlehales it isn't even necessary to use logs. Pretty soon celestial navigation will be as easy as rolling off a log.

And it's much more interesting. You'll be surprised to find how logically self-confidence and the knowledge of navigation support each other. They are the bases of the arch of which good judgment is the keystone.

Navigation Now Possible Without Complex Mathematics

*G. W. Littlehales of the U. S. Hydrographic Office Presents
a New Method Which Will Simplify Nautical Astronomy*

By Dean Potter

IT is announced that the Hydrographic office has in press a new table for the solution of the longitude problem. A description of the method is at hand which warrants the claim that in speed and workability it surpasses all predecessors. The matter is of especial interest to yachtsmen, for the table abolishes any need of logarithms and trigonometric computation. Thus dawns the day when simple arithmetic suffices for practical navigation.

The table was prepared under the direction of G. W. Littlehales, an accomplished mathematician of the Hydrographic Office. It saves the burden of computing longitude triangles by giving the answers to a million or so of them, ready made in advance. In harmony with the usual practice, it is prepared for even degree data, and intermediate values are found by splitting differences, or, as it is called, by interpolation. A common objection to tables is that they do not lend themselves to easy interpolation. But by an ingenious combination of methods, Mr. Littlehales appears to have obviated this difficulty.

The new method may be best understood by comparison with preceding ones.

Ancient navigation had no dependable method for the determination of longitude at sea. The methods now in use are relatively modern, and it was no royal road that led to their discovery. They are the ripened fruitage of very tender plants, brought to perfection through great toil and indomitable perseverance, and despite much failure and disappointment. Columbus could find his latitude by observation. But he had no means of determining longitude save by dead reckoning; that is, by keeping track of the direction and distance sailed. In his day, this method was but little better than none. It was mere educated guesswork. Sometimes its errors, especially on long voyages, reached staggering totals.

In 1675 the British government founded Greenwich observatory, and commenced the great work of cataloging the positions of the sun, moon, planets and stars which has resulted in the now familiar nautical almanac. In 1761 Maskelyne, Astronomer Royal, was able to practice a

method of determining longitude by lunar distances, which he subsequently recommended to the Admiralty. This method became the mariner's standby. It was the method of our own Bowditch on his several voyages, and survived until supplanted by the chronometer sight.

The chronometer was invented by John Harrison in

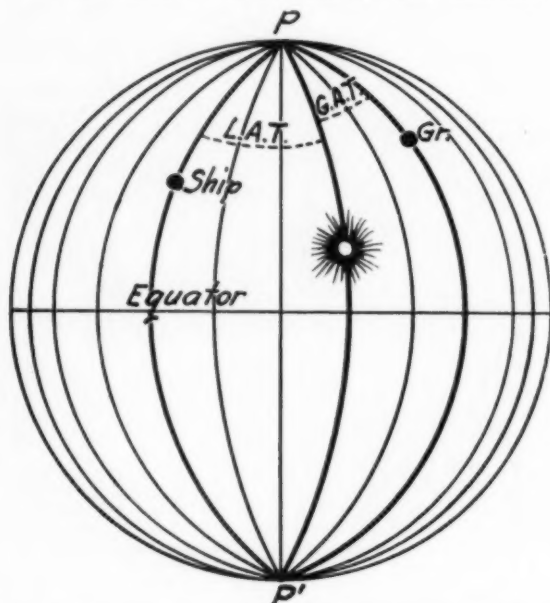


Fig. 1. Showing in heavy lines the meridians passing through Greenwich, the sun, and the ship. The angle G.A.T., between the meridians of Greenwich and the sun is the Greenwich apparent time. The angle L.A.T., between the meridians of the sun and the ship, is the local apparent time. Their sum or difference, according to the method adopted of reckoning the angles, is the longitude at ship

about 1761. But it took years for the chronometer sight to supersede the lunar, and the lunar data was not dropped from the nautical almanac until 1911.

The chronometer sight mystifies many laymen. Yet in principle it is very simple. Longitude is reckoned from Greenwich. By comparing the distance of the observer from the sun, with the distance of the sun from Greenwich, the observer's distance from Greenwich is found, and this is his longitude. By distance, of course, is meant angular distance between the meridians of the observer, the sun, and Greenwich.

To explain more fully: The chronometer, merely an accurate clock, enables the mariner to ascertain the sun's hour angle, that is, its angular distance from the meridian of Greenwich, called the Greenwich apparent time. The sextant observation enables him to obtain the sun's hour angle from the ship, or the local apparent time. The algebraic difference between the two times is the longitude, reckoned from Greenwich. Fig. 1 may aid the explanation.

The sun is placed two hours west of the Greenwich meridian, and three hours east of the ship. Thus the ship is five hours west of Greenwich, or in 75° West longitude, each hour equalling 15° .

The portion of the problem which brings in the fear-some logarithms and trigonometry is that which has to do with finding the hour angle at ship, or local apparent time. This is done by solving the spherical triangle illustrated in Fig. 2. Every triangle has six parts, three sides and three angles. If any three parts are known, one of them being a side, the remaining parts may be computed. What the navigator requires is the hour angle at the pole (marked t , Fig. 2), which represents the time difference between the ship and the sun. The three parts of the triangle which he has to work from are the polar distance, zenith distance and co-latitude (Fig. 2), found as follows:

1. The nautical almanac gives the sun's declination, or its distance north or south of the equator; practically its latitude. From equator to pole is 90° . Deducting the declination from 90° gives the polar distance; one side of the triangle.

2. The sextant observation gives the sun's altitude or height above the horizon. From the zenith, or point directly overhead, to the horizon is 90° , and between zenith and horizon is the sun. Deducting the altitude from 90° gives the zenith distance; another side of the triangle.

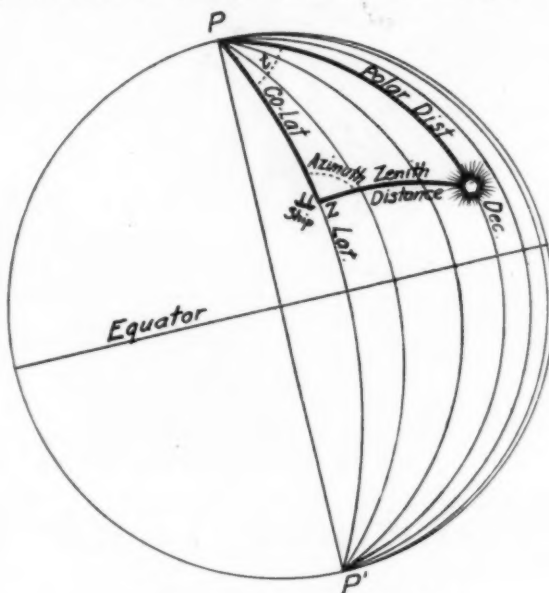


Fig. 2. The astronomical triangle

3. The latitude by dead reckoning, deducted from 90° , gives the co-latitude, or arc of the meridian from ship to pole; the third side of the triangle.

With the three sides, the triangle is solved, and the hour angle t at the pole obtained. This is the local apparent

A New Course in Nautical Astronomy

IT is with considerable pleasure that we are able to announce that Dean Potter has consented to prepare a further series of articles, covering the subject of nautical astronomy, for the readers of *MoToR BOATING*. It is not intended that this series will be a complete treatise on this very complex subject, but will cover more particularly the essentials of offshore navigation which would be required in small boat sailing. By the use of the tables prepared by G. W. Littlehales, it is now practical to navigate a boat without the use of trigonometry and logarithms. The series of articles which are to follow will take the form of a short course on the subject which will be sufficient for practical position finding, workable by inspection and from which all non-essentials have been eliminated. There will be included a chapter on the scope, definitions, time, and the use of the nautical almanac. Another will cover the determination of latitude by a meridian altitude. Longitude will be determined by the use of the new tables by Littlehales. Still another chapter will discuss the azimuth problem, more particularly as a means of compass correction. These three methods will be fully explained, using both the sun and the stars for the purpose. Such explanations as are required will be included in the proper place and full explanation of sun time, sidereal time, right ascension, and all necessary definitions will be included

time. Comparing it with the Greenwich apparent time at the instant of observation, the longitude is found. The triangle is solved by trigonometry, generally employing logarithms.

This method had its drawbacks. The declination, taken from the nautical almanac, was dependable. Under fair conditions, the sextant altitude was dependable. Thus two sides of the triangle were obtainable with reliable accuracy. But the third side depended upon the dead reckoning latitude, often not dependable. Indeed it might be far out, and induce a large error in the calculated longitude.

Such was the old time sight. Then came Thomas H. Sumner, an able American shipmaster, who hit upon a method of ridding the problem of the latitude error. In 1837 Capt. Sumner was voyaging to Greenock. He encountered a period of thick weather which prevented observations. On a stormy night, he found himself forty miles by dead reckoning off Tuskar light, with southeasterly gales which made the Irish coast a lee shore. He held off and on during the night, and in the morning, no land being in sight, managed to get a time sight on the sun. He worked up the longitude using his dead reckoning latitude, and plotted the position upon the chart. But so long a time had elapsed since his last observation, that he feared the dead reckoning latitude might be in error. He therefore reworked the problem assuming a latitude 10' farther north, and again plotted his position. Still apprehensive, he reworked it a third time, assuming a latitude 10' south of the dead reckoning latitude, and plotted. Well knowing the effect an erroneous latitude might have on the resultant position, Capt. Sumner made allowances for an error of 10 miles in either direction. When the three positions had been laid on the chart, he noted that *they stood in a straight line*, bearing, as it happened, NNE and in the direction of Small's Light. It at once occurred to him that the same altitude must hold good at all three points, at Small's Light, and at the ship, at the same instant of time, and that the ship must be on the line connecting these points. He held the vessel NNE, and soon brought Small's Light close aboard and bearing dead ahead.

In 1843 Capt. Sumner published a book giving the theory of his discovery, which let us explain by illustration: Suppose a man stands in a level field, in the center of which is a flag-staff; and, sextant in hand, observes its angular height, or altitude. If he then walks around the staff in such direction that its altitude remains the same, he will describe a circle about it. If he steps to a place where the angle becomes less, he must be without the circle. If he steps to a place where the angle becomes greater, he must be nearer the pole and within the circle. If the angle remains constant, he is on the circle. His distance from the staff is the radius of the circle.

So when we observe an altitude of the sun, we really locate ourselves upon a huge circle of position, the center

of which is the point on the earth beneath the sun, the radius being the great circle distance from such point to ourselves, or, what is equivalent, the zenith distance, or distance from the sun to the point immediately over our heads. Thus, the same altitude might be obtained, at the same instant of time, from any place on the circle. This circle runs through many points of latitude, and the correct position on the circle can only be determined if the true latitude be known. But even with an erroneous latitude, we can locate ourselves *somewhere* upon the circle, provided our altitude and chronometer time be correct.

Thus Sumner proposed that each sight be worked twice, each time with an assumed latitude, one north, the other south, of the dead reckoning latitude, and wide enough apart to cover all probable error in the dead reckoning position. The solutions resulted in two longitudes, and these with their corresponding assumed latitudes were plotted upon the chart, and connected with a straight line, which came to be known as a Sumner line.

The straight line which Captain Sumner had noted upon his chart off the Irish coast was really but a short arc of a circle of position, a circle so large that a small part of it appeared straight.

By this method, a single sight did not give a definite position, but gave a line of position, on some part of which the navigator knew his vessel must be. The true latitude and longitude was somewhere along the line. If he could obtain two simultaneous observations of bodies properly located, such as the sun and moon, or two stars, the Sumner lines would run in different directions, and the point of their intersection would be the ship's position. Or he could wait until the sun's bearing had changed sufficiently, and then take a second observation, obtaining a cross Sumner line; in which case, of course, he would have to make allowance for the run made between observations. Sumner further suggested that since the arc of the circle of position always stood at right angles to the bearing or azimuth of the sun, it would suffice to work the problem but once, and then draw the position line through the point so found, at right angles with the azimuth.

The next advance step came from the French admiral, Marc Saint Hilaire, who made a new application of Sumner's principle, and simplified the mathematics. In substance, he said: Instead of calculating the sun's hour angle, I can as easily calculate its zenith distance, which, deducted from 90°, will give its true altitude. If I calculate the sun's altitude from my dead reckoning position, then, if my position is correct, the calculated altitude should agree precisely with the observed altitude. If the altitudes do not agree, I cannot be at that position. If the observed altitude is greater, I must be nearer the sun; if less, I must be farther from it, than I supposed myself to be. And

(Continued on page 96)

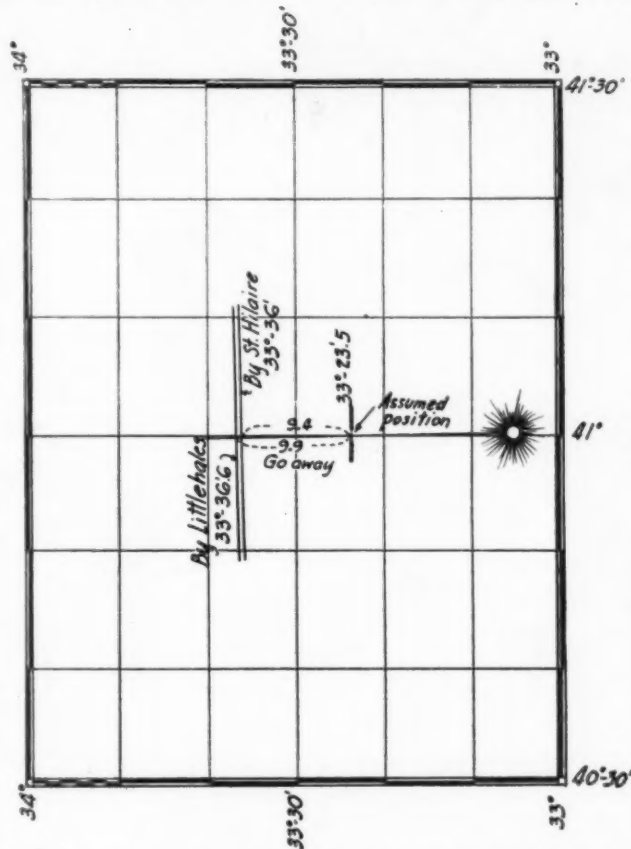


Fig. 3. Showing the plotting of lines of position by each method. Through the assumed position, a line of bearing is drawn in the direction of the sun. Then the difference between the observed altitude and the calculated or table altitude is laid off away from, or toward, the sun. Through the point so found, the line of position is drawn at right angles with the line of bearing. The latitude and longitude along the line of position are measured from the chart scale.



Dr. R. H. Daniels, Peoria, Ill.



C. P. Hanley, Muscatine, Ia.



A. A. Schantz, Detroit, Mich.



Humphrey Birm, Buffalo, N. Y.



Gordon Hammersley, New York



Paul Strasburg, Detroit, Mich.



Sheldon Clark, Chicago, Ill.



Alexander McLeod, Detroit, Mich.



W. Roy Halsey, New York



Gar Wood, Detroit, Mich.



H. B. Greening, Hamilton, Ont.



A. C. Strong, Evanston, Ill.



F. C. Ericson, Toronto, Canada



E. Gregory, Detroit, Mich.



"Dusty" Farnum, Los Angeles, Cal



Ralph Sidway, Buffalo, N. Y.



L. E. Shelby, Peoria, Ill.



Webb Jay, Chicago, Ill.



Griffith B. Clarke, Toronto, Canada

Their Hats *Are* Another Racing Season Promises to be the Most

THE thirty-seven raceboat owner-drivers pictured on these pages have all assured us that their craft will be at the starting line for this season's events. Beginning with the New York-Atlantic City race on June 22-24, for the James Craig and other trophies, the season will have an auspicious opening. One week later, the Middletown Yacht Club will conduct events for the A. P. B. A. Express and Speed Cruiser Championship of America.

The speed boat season of 1923 will be officially opened at the Burlington, Iowa,



Walter B. Wilde, Peoria, Ill.



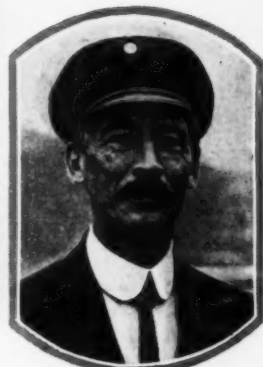
Harry Parsons, Cleveland, Ohio



Fred Schramm, Milwaukee, Wis.



E. L. Grimm, Buffalo, N. Y.



A. B. Cartledge, Philadelphia, Pa.



M. S. Cornell, Middletown, Conn.



Col. Thomas A. Duff, Toronto, Can.



Charles J. Venn, Chicago, Ill.



E. W. Crowley, Detroit, Mich.



Carl G. Fisher, Miami and New York



Frank A. Garbutt, Los Angeles, Cal.



Edsel B. Ford, Detroit, Mich.



Col. J. G. Vincent, Detroit, Mich.



W. C. Wood, Minneapolis, Minn.



George Leary, Jr., New York



C. W. Kotcher, Detroit, Mich.



Ethel Hanley, Muscatine, Ia.

In the Ring

About to Begin, Which
Active One Ever

Regatta of the M. V. P. B. A., on July 1-4. On July 7 the New York Athletic Club will conduct its annual cruiser race to Block Island. July 28-August 12 are the dates for the Chicago Regatta this year. The A. P. B. A. Cruiser Championship will be held from the Philadelphia Yacht Club on August 4. The biggest event of the season will be the Gold Cup Regatta, August 29-September 3, conducted by the Detroit Yacht Club. On September 6-9, the Toronto Motor Boat Club, and on September 13-15, the Buffalo Launch Club will hold races.



Photographs by M. Rosenfeld

Cintra on her trial trip at Boston recently

Cintra, the First 1923 Express Cruiser

A Twin Screw Fifty Footer Powered with Nine Hundred Horse Power Which Should Show Exceptional Speed

DOWN East has come to it. At last the speed cruiser has found its way to Massachusetts Bay. Cintra, built by Geo. Lawley & Son Corp., of Boston, for S. E. Hutchinson from designs by Tams and King, of New York, and recently tried out successfully on Boston Harbor, is the first craft of her type in that locality and is likely to be the forerunner of many similar boats to come.

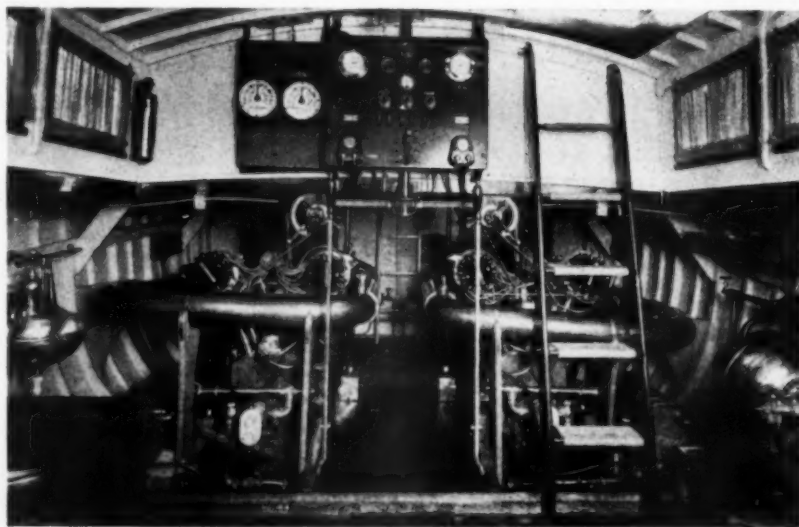
Cintra is a fifty foot bridge deck cruiser of excellent design, and having the accommodations usually found in the slow speed cruiser, which in itself is quite an innovation in speed cruiser design. In addition to this she is of the usual Lawley high quality of construction and finish, features which should go a long ways toward making the express cruiser a popular type of craft among those who desire speed as well

Messrs. Fred and Geo. Lawley who built Cintra

as comfort afloat. The power plant of Cintra consists of two Gar Wood Liberty marine motors. In her first trials with the motors turning only 1,000 revolutions per minute, Cintra showed a speed of nearly 30 miles an hour, with propellers far too large. With the proper wheels a speed

of close to 40 miles an hour is probable.

The engine room of Cintra is especially commodious and well arranged. The after portion of the motors is located beneath the bridge deck, but are accessible from all sides. Forward of the motors there is no bulkhead, but the space is left open which arrangement results in a cool and livable motor room. A Homelite set is installed for furnishing extra electrical power.



The motor room of Cintra showing the Gar Wood motors and the Homelite auxiliary set

How Chaos Came to Bayside

*A Tale of Adventures Experienced on a Short Journey
Up the East River in a 43-Foot Auxiliary Yawl*

By Lloyd E. M. Mayer

Illustrated by Geo. A. Picken

WHEN Eddie fractured the library hush of a New York club by rushing toward me brandishing excitedly a late number of a nautical publication and indicating with a palsied forefinger the following advertisement I confess to having expressed my elation in a manner hardly less undignified and disturbing to the placid turning of the bookworms round about us:

"For Sale — Seagoing auxiliary yawl, 43' x 10' x 6'8". Sleeps seven. \$1,550. Etc., etc., etc."

I think it was the expression "seagoing" that intrigued us quite as much as the inviting price. You see we prided ourselves on being nothing if not seagoing, having weathered some twenty-odd months in the late unlamented submarine chasers anent which the general public knows, even now, less than we did before the grim period of our initiation.

Anyhow, a post-war existence in the hall bedrooms of the metropolis had become irksome. We craved the freedom of the seas. We had visioned an untrammelled life aboard just such a yawl as this advertisement described. Minor details, such as the continuance of business under such circumstances escaped us during the rapt interval of contemplation. Synchronously we arrive at the same conclusion. By hook or crook we must manage to annex this prize before she was captured by some one of the other prospective purchasers whom we fancied avid and numerous, considering the nature of the bargain.

Saturday afternoon therefore, found us aboard the bath tub subway, as we called it—you know the one that goes to Coney Island and whose cars look for all the world like big bath tubs full of dirty people. A preliminary telephone conversation with the owner of our dream ship had gleaned the information that the vessel might be inspected at her anchorage in Gravesend Bay. Accordingly we got off at Bath Beach and footed it rather excitedly down to the docks. There amidst a heterogeneous assemblage of pleasure craft (for the most part hideous and drabbed) a gallant black yawl stood forth in proud contrast to her bourgeois environment. But she looked sixty feet in length if an inch.

"Can't be her," mused Eddie, ungrammatically laconic.

"No," I agreed, not attempting to conceal my disappointment that it couldn't.

I asked a casual of the sea who sat dangling his legs and a fishing rod. "Where's this yawl that's for sale lying?" He blinked. Then, as understanding dawned, slow as a

foggy morning on the Grand Banks, he pointed and shaped the words immortalized by George M. Cohan: "Over there."

We saw his point all right, but we simply couldn't believe him at the moment. He had indicated that splendid black yawl, and somehow \$1,550 seemed a ridiculously small sum for such a conspicuously large boat. Our informant added in the languid voice of one who, having been unwillingly aroused, is about to roll over and continue snoozing: "We call her the ship."

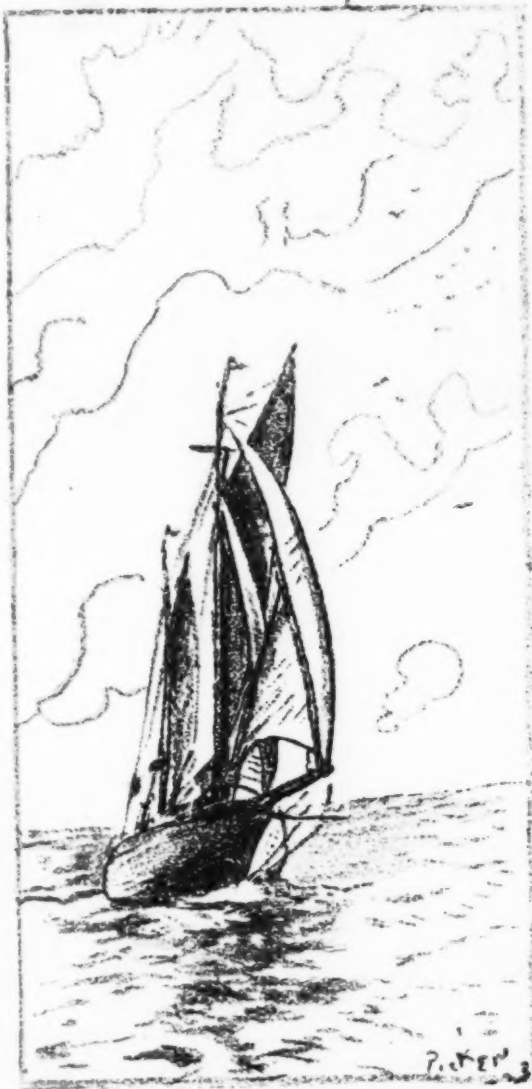
But Eddie and I weren't listening. We were hailing that yawl with callous disregard for the acoustics of the neighborhood, which were excellent. At first nothing happened except that various windows in houses along the waterfront were thrown up and presumably shrewish housewives looked forth upon us with what, even at that uncertain distance, might be construed as disfavor. Presently, however, a skiff, propelled by a stumpy individual in a red flannel shirt, shoved off from the yawl and moved slowly toward the dock.

When he was close aboard, "Captain Haze?" I ventured.

"Howdy," was the reply, followed closely by a stream of nautical phraseology, most of which eluded us. We did gather, however, that it looked as if it were going to blow, that he had been running out another anchor, that he had been expecting us all afternoon and that the sole reason responsible for his willing-

ness to part with the boat was the fact that he had rheumatism. Meanwhile, Eddie and I having boarded the skiff, the old chap was pulling us toward the yawl at a clip and with a vigor that seemed to belie the last statement.

As we swung under the elliptical stern I noted indistinctly the dulled brass lettering. That prompted me to ask: "What's her name, Captain?" He blushed, at least it seemed



Filling away on the starboard tack



The skipper concentrates on the car floats ahead

to us that the slight reddening under the magnificent tan amounted to a blush, and stammered: "Chaos," sounding the h as in chance, and adding hastily and apologetically: "Kind of a funny name, boys. I don't know just what it means." We were too much disturbed by the ominous connotations of the word to enlighten him.

But next moment we stood upon the deck of that gallant yawl and whatever misgivings we may have felt on hearing her name were dissipated by the wave of enthusiasm which engulfed us. From stem to stern she looked as staunch and trim as the smartest clipper.

"She's shippy, boys," stated Captain Haze, securing the skiff astern. And that proved to be only one of the captain's ant epithets.

Indeed she was shippy. Everything about her bespoke the skillful touch of the blue-water sailor. Everything was rugged, durable and shipshape, from the tip of her twenty-two-foot bowsprit to the end of her jaunty bumpkin. High-sided, with a giddy tumble-home like that of an English cutter, flush-decked, she looked capable of weathering even one of those Canary octoroons or eight-sided storms which the intrepid Captain Traprock encountered in Kawa.

Captain Haze, continuing to shoot unceasingly his sea-going line, presently conducted us below through a commodious companionway of solid mahogany, down a ladder, brass-trimmed, and into the after cabin. The engine, a 10-hp., single-cylinder Mianus of ancient vintage, but of undoubted prowess when roused, was installed neatly be-

neath the steps. Aft this was a chest of drawers and on either side were the entrances to the lazarette. There were no ports, the cabin depending for its illumination on the skylight, which, adjoining the hatch, extended to within a few feet of the mainmast. There was ample headroom under the deck-beams, which were alternately reinforced with iron, Chaos being of semi-composite construction. Transoms on either side providing sleeping accommodations for four, allowing plenty of room for pipe berth uppers if occasion demanded.

Forward of the main cabin, on the starboard side, was a lavatory, opposite which loomed an enormous ice-chest that looked capable of containing innumerable bottles of beer. Eddie made the rather apposite comment that the boat seemed to have been built around this receptacle, and, as a matter of fact, what detail of a yacht's construction received more meticulous attention in the days when water was considered only fit to sail upon?

A combined galley and forecabin completed the accommodations below decks. Stowage space was provided under all transoms, in lockers in the main cabin and galley and in a forepeak forward of the chain locker. There was an immense amount of gear, odds and ends of all kinds; shackles, swivels, old sails, rope, wire rigging, paint.

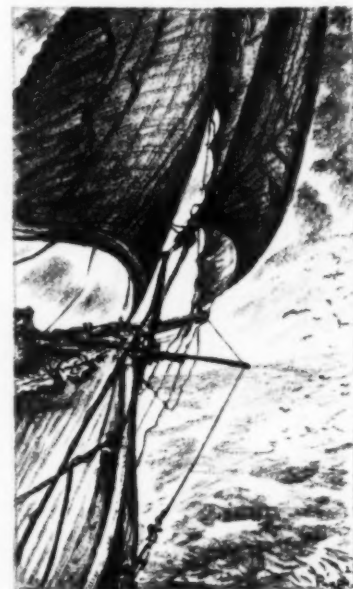
Active as a boy and loquacious as a New England housewife, Captain Haze scrambled about like an egg in a frying pan, prefacing every answer to our questions with an unvarying: "Well, I'll tell ye about that, boys." And in so far as we were able to interpret their hypernautical phrasing, the answers were generally complete and satisfying. Comprehensive snatches of a torrent of voluntary information, couched in the same deep-sea dialect, provided us with vivid vignettes of the old yawl hove to in a hurricane off the Hook, handling like a top under close-reefed mainsail and jumbo or jib and jigger, and, in lighter moments, showing a clean pair of heels to anything on the Sound, as the captain glibly put it.

When we emerged on deck after our rather casual inspection Eddie and I exchanged glances of unreserved approval. The voluble

captain was forward at the moment, bestowing a squint on the bridle at which the old hooker was tugging like a mettlesome mustang. Gravesend Bay is a mean anchorage in a snorting nor'wester, and there are pleasanter lee shores than Brooklyn.

I called, "Would you take fourteen hundred for her, captain?"

The answering bellow came with almost disconcerting suddenness: "Well, I'll tell ye about that, boys; well, yes, I would!" Eddie and I regarded one another



Chaos shook her canvas derisively in the face of the blackest squalls

with glances of mingled congratulation and alarm. Needless to say neither of us had the fourteen hundred nor any considerable fraction thereof. We had made the offer without the slightest hope of its being accepted, yet its acceptance swung open the door on the enchanted vistas of possibility. Conceivably we *might* raise that sum and acquire possession of this utterly desirable yawl, oh, celestial thought!

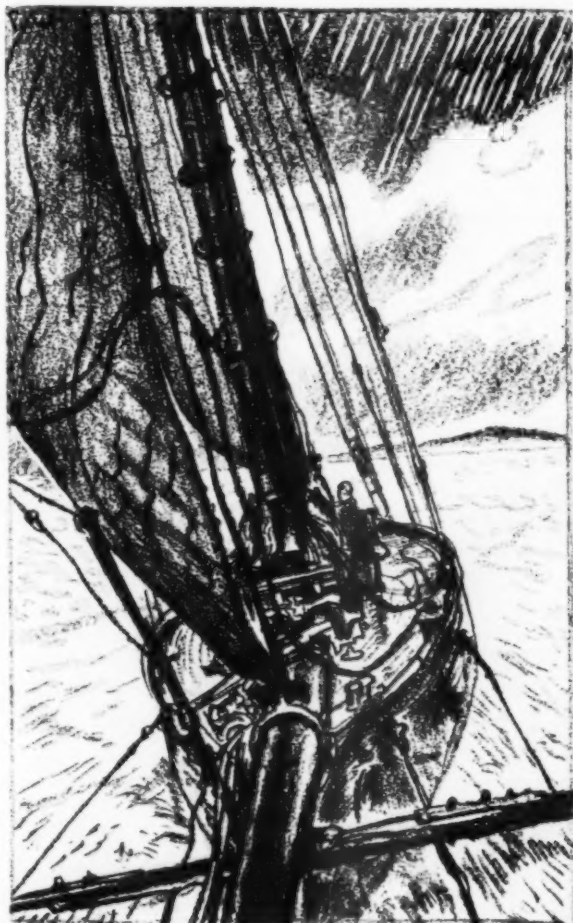
We were drunk with it. A moment later, in the cabin, we besought the simple captain to part with his vessel on the installment plan. He was not as simple as we thought him. He refused. Thereupon Eddie, who seldom betrayed emotion about anything, became so eloquent that the shaggy old sea dog, with tears in his eyes and a voice shaken with pity or excitement, we shall never know which, finally accepted a deposit of fifty dollars and gave us a week in which to muster the balance.

"She'll be a home for ye, boys," he concluded, adding, in a small, sorrowful voice, "My wife says I'm no business man, but I want to sell her (the boat, not the wife, of course) to some one who'll take an interest into her like I know you boys will."

From that moment Eddie and I became a desperately-functioning ways and means committee. In fortunate ignorance of Ponzi through whose business gymnastics we might have thought to Wallingford our sea of difficulties, we cast about for some quick scheme of wealth assimilation. None presented itself and after three days of hectic brain-goadings I gave up. I



Chaos can show a clean pair of heels to anything in her mid-Victorian class



Reeling off the miles under a fair breeze

thought Eddie would develop nervous prostration. He was inconsolable. As a last resort he wrote frantically to an uncle who, after investigating the cause of the excitement with placid and exasperating deliberation, consented somewhat grudgingly to provide his hysterical nephew with a devastating advance upon his allowance.

Almost coincidentally I received a war service bonus from my native state. In consequence what had appeared impossible of realization a moment before now resolved itself into an accomplished fact. We had the price of our emancipation from the furnished rooms of New York.

Bristling with cheques and specie, we reappeared aboard Chaos the following Friday afternoon and were received by Captain Haze in a cabin which had been titivated to an astonishing degree in honor of our accession. We were informed that the motor which had impressed us as being less doughty than doubtful was in perfect trim, but that it "turned hard" owing to the insertion of new piston rings. In proof of this statement Captain Haze cranked the brute with Herculean effort and disappointing effect. Once or twice it fired feebly.

Then Eddie cranked and I cranked and the captain, blowing like a porpoise, cranked again. But beyond an occasional convulsive revolution, accompanied by a mocking "bah!" from the exhaust we achieved nothing in the way of action. Eddie and I were as abysmally ignorant of gas engines as Noah himself. Beyond the elemental crank and curse stage we could not advance. We regarded the motor inimically during an awkward interlude which Captain Haze terminated by a characteristic optimism.

"Well, I'll tell ye about *that*, boys. You'll get used to her same's I done. All she needs is a little workin' in. Them piston rings 'll limber up after she's been run a bit." He mopped his dewy brow with a voluminous bandanna, hitched the sleeves of his red flannel shirt and lit an aromatic pipe before continuing blandly, "You can get the sails onto her and work her up the channel on tomorrow's flood. That had orter carry ye through the Gate ef ye start in time. If not ye can anchor in Astoria Bay and wait for the next tide." All of which seemed quite feasible to us and even facile of accomplishment.

That night we dreamed auriferously of cobalt depths and palmy islands starting from the mists of tropic seas.

Saturday dawned inauspiciously for a get-away under canvas. It breezed up again from the nor'west and blew

(Continued on page 122)

The De Forest reflex portable set with the transcontinental range. This set is entirely self contained and uses the new De Forest dry cell tubes. Batteries are carried in a compartment underneath and the weight is so slight that it can be carried in one hand.



RADIO found its first application aboard ship. It is still true that the one place where radio fits in best is aboard ship, and many yachtsmen the country over during the present season will find ever increasing benefit and pleasure to be derived from the installation of a radio receiving equipment, no matter how small the vessel may be. For, not only are weather forecasts, storm warnings, time signals, as broadcasted from the naval observatory in Washington, and market and news reports available, but there is also a vast amount of entertainment and amusement to be secured by listening in to the most excellent programs being broadcast nowadays by the broadcasting stations to be found in and around every city of importance in the United States and Canada.

The reason that radio has not come into its own on the small vessel sailing inland and coastwise waters is because that previous to the present season there have been no radio telephone stations. One might say that during one winter the whole broadcasting network has been born. A year ago at this time there were only a half dozen stations in the country. At the present writing there are very close to five hundred, and over fifty of these are rated as first class, high power installations. Previous to the birth of broadcasting, in order for one to benefit from radio, it was necessary that

Is Your Cruiser Radio Equipped?

A Simple Installation of Radio Apparatus Will Provide Your Boat With an Endless Round of Entertainment

By Paul F. Godley

one should learn the telegraph codes, and few yachtsmen found time or inclination sufficient to accomplish this.

The installation of a radio receiver, anywhere, is a very simple matter indeed. The purpose of this series of articles is merely to offer some suggestions for those who have had no previous experience, and the suggestions will not only cover the choice of receiving equipment, the installation of the equipment and its maintenance, but also some suggestive information in connection with the use of certain types of receiving equipment for radio telephone transmission over distances of a mile or more, and descriptions of quite simple low power radio telephone installations which any yachtsman can install and operate at no very great expense. The lowest power telephone installation available on the market will enable telephone communication to be carried on for distances ranging between ten and fifty miles over water under most any conditions, and such an installation or several of them should prove

extremely useful in connection with the activities of any yacht club.

To put any radio receiver into operation requires some type of aerial wire, and a connection to earth. On board the small boat the antenna may best consist of two parallel wires running from the stem to the top of the mast and down to the stern. It may lead into the cabin at either the fore or aft end. This is merely a matter of convenience. It is not de-

Radio On Your Boat

Paul F. Godley, the author of this article, is the world famous amateur radio enthusiast who, it will be remembered, received in England the first radio signals to be transmitted across the Atlantic Ocean to Europe from the United States, on short amateur wave lengths. He has agreed to write several additional articles for you, the readers of *MoToR BOATING*. Mr. Godley will cover in his subsequent stories, the assembly of a first class receiving set, and later on, a set which will include a complete radio telephone transmitting unit designed especially for motor boat work. Watch for these articles, they will be worth while.—Editor.



The Amrad super-range radio frequency receiver is suitable for installation in the finest yachts or cruisers and will receive from any part of the country

sirable on vessels under one hundred feet in length to attempt to bring the lead-in from the middle of the elevated wire, for, within the limits including all smaller motor vessels, the longer and higher the antenna wire, the stronger and more sensitive will be the receiving equipment.

The ground connection may be very easily secured by fastening a wire to the engine, or the propeller shaft, or, best of all, to the copper sheathing on the bottom of the vessel. There is formed by this combination of elevated wire and earth connection, the terminals of a condenser, the plates of which are separated by the insulating material, air. When a coil of wire is connected between these two, the requirements of the radio circuit are fulfilled.

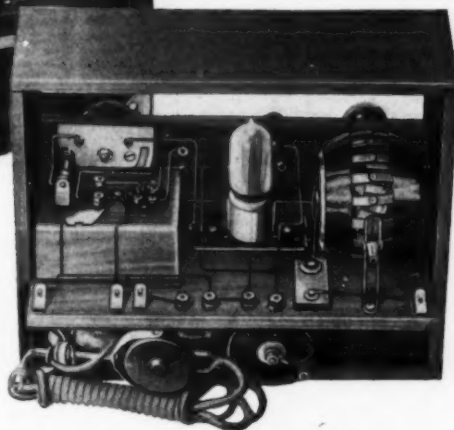
The receiver, which may be purchased or built, if proper instructions are available, contains the coil above mentioned, and in the better types, a second circuit formed by coil and condenser which energizes a detecting device.

In general there are two types of receivers. One depends for detection upon



Front and rear of the new Amrad portable reflex receiver. This operates on a single dry cell tube and has a large range

essarily be true, since a vacuum tube amplifier may be quite conveniently installed in addition to other equipment, thus enabling everyone aboard ship, or, for that matter, everyone within the radius of a quarter of a mile to hear the program. The range in miles over which a crystal



The Whiteland radio receiving set is a straight circuit set enclosed in a fine mahogany cabinet. It has a concealed loud speaker and does not require head phones

receiver will function when it is tuned to the best type of broadcasting station is approximately twenty. The range in miles over which a vacuum tube receiver of the best type will receive from a like broadcasting station when installed upon a small vessel, is approximately one hundred miles. During darkness these distances are often increased 15 fold, due to natural phenomena as yet not entirely understood.

For most yachtsmen, then, it will be a question of the installation of a vacuum tube receiver. He will find the batteries used aboard his ship for ignition purposes, or for lighting, if electric lights are installed, sufficient for supplying energy to the filament of the vacuum tube. The tubes most commonly used call for a battery supply of six volts for the filament. The telephone or output circuit of the vacuum tube is supplied with small dry batteries put in units so as to give out twenty-two and one-

(Continued on Page 88)

certain properties of crystalline minerals. These are known as crystal detector outfits. The other depends for its detection upon a device known as the three element vacuum tube, or, merely, the vacuum tube. These last are classed as vacuum tube receivers. The maintenance of a crystal receiver is far simpler than any other yet devised. Its operation is somewhat simpler, but also slightly less dependable. Its cost is also a very small portion of that of the vacuum tube detector. Its range of reception, on the other hand, is considerably less than that of the vacuum tube outfit, and it is for this reason that one would choose the vacuum tube equipment.

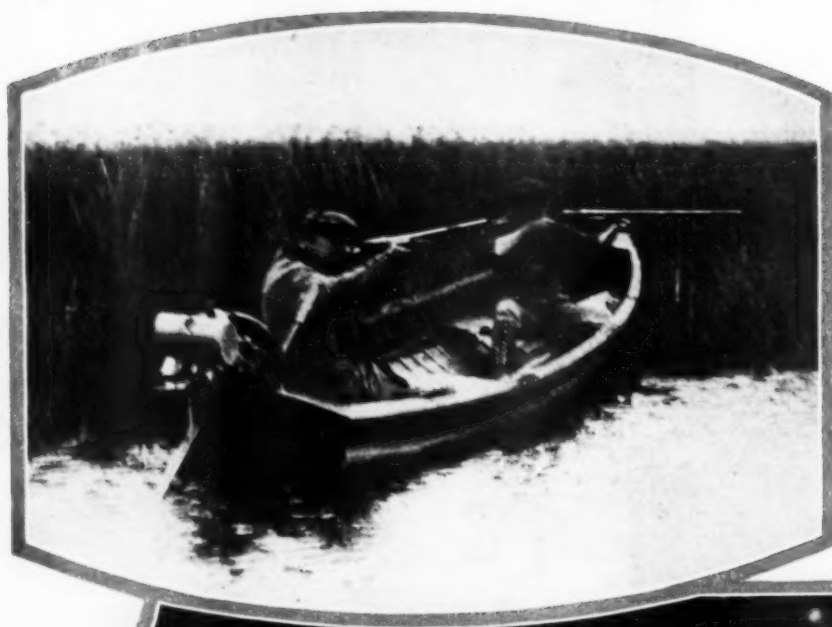
The crystal receiver consists of one or two tuned radio circuits, the crystal detector, and a pair of telephones. The vacuum tube receiver consists of either two or three tuned circuits, a vacuum tube detector, the batteries for lighting the filament of the vacuum tube lamp, and a battery for supplying energy to the telephone or output circuit of the vacuum tube. The average crystal receiver may range in cost from fifteen to thirty-five dollars, while the average vacuum tube receiver may range in cost from seventy-five to two hundred dollars. With the crystal type of receiver all of those listening will need to wear telephone head sets. With the vacuum tube receiver, this need not nec-



This Kennedy portable set is of very light weight and will accommodate all of the new standard tubes on the market. It is simple to tune and will receive all wave lengths between 175 and 700 meters

For Shooting and Fishing or

*Practical Little Portable
Life and Stimulating Interest*



What is more desirable when shooting the elusive duck on an early morning in the fall, than a little portable motor which can drive a boat rapidly into the thickest of the reeds, where it can be completely concealed.

What could be sweeter than five pretty girls motor boating around the lake, seeking the clearest water for their daily dip. Who would hesitate to think what happens when the boat when they all dive at once for a fresh fish as bright as the sun.



One of the outboard motors is equipped with a magneto for starting by turning the handle.

Major Swimming and Camping

Portable Motors Add to the Benefits of Outdoor
Interest in All Sports and Summer Recreations

When trolling for
fish, the little
motor at the stern
will move the boat
ever so slowly so
that the gamey fish
can have every
chance to pick up
the fly. The same
clear motor will drive the
boat rapidly back to
camp where the
fresh fish will serve
as breakfast



One of the most popular types of
outboard portable motors which
is equipped with a high tension
magneto and arranged to operate
by turning the rubber covered
handle grip

When the boat is hauled out to
make camp the little outboard
engine remains in place and the
propeller is protected from injury
by the rudder blade



Attractive Cruiser Cabin Arrangements

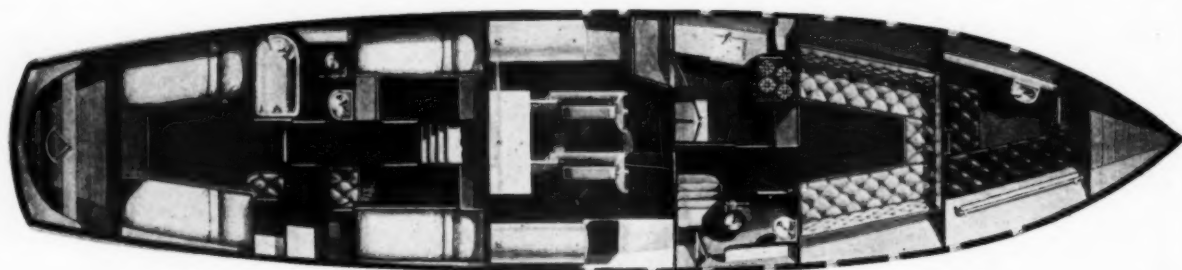
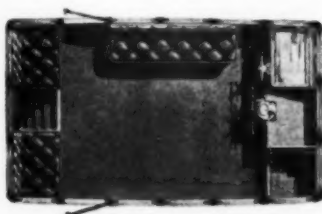
Careful Study of Most Effective Interior Plans Result in Utmost Economy of Space and Convenience of Arrangement

Illustrations Courtesy of The Elco Works

WHO ever heard of a Packard automobile with a Ford engine, or who would think of demanding a twelve-cylinder engine in a Ford car? Equally absurd is the tendency of many of our yacht and motor boat owners in demanding similarly difficult conditions in their boats. What difference does it make in the finished result if the galley is six inches more forward or aft, or even if it be placed on the starboard instead of the port side? We buy our automobiles exactly as the builder turns them out. We have in certain price groups, a wide selection of machines which vary in some respects. But have we the choice of telling the builder, I will take this car if you equip it with such and such an engine, or if you install the radiator at the stern instead of the bow. A standardized body adapted to a standardized chassis suits the requirements of practically all automobile purchasers. Why should not a

Within the limited confines of any one hull, there is only a certain definite amount of space. The problem of the designer of a boat is to use this to the very best advantage so that a maximum of convenience and comfort will result. In the arrangements of the standardized Elco boats reproduced here all features of the vessels are plainly shown. The illustration of the big 56-footer is particularly interesting.

The big feature is of course the 15-foot deckhouse which encloses the bridge; this is arranged to be opened completely in pleasant weather. Quarters for the owner are arranged aft and comprise a large double stateroom, as well as two single staterooms with built-in berths. A bathroom conveniently arranged is accessible from all parts of the owner's quarters. Such details as lockers for clothing and drawer spaces are well taken care of in each room. In the 'midship portion of the boat are located the two Elco engines with their tanks, batteries, and other sundries. Just forward of the engine-room bulk-



Interior of the standardized 56-foot Elco cruiser with arrangement of deck house above

standardized boat built on a quantity basis serve the needs of boat users equally well? As the automobile manufacturer bases his product entirely on the popular demand and arranges it according to his experience and that of myriads of satisfied users, so should the boatman accept the experience, skill, and judgment of the boat builders.

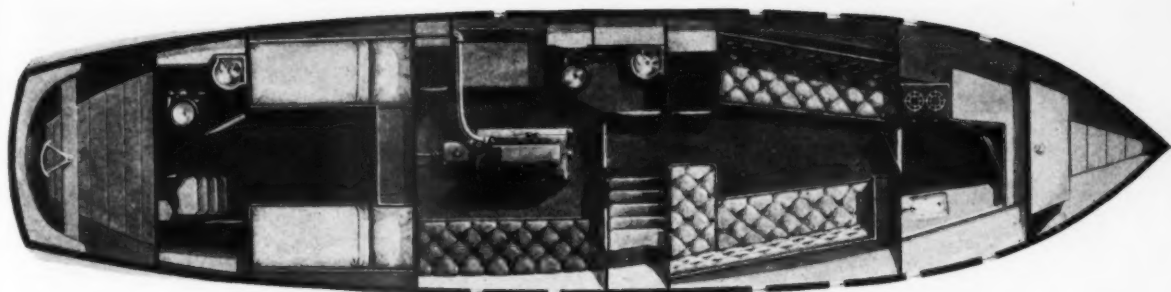
In demanding a boat which incorporates his own individual ideas, the yacht owner places himself in the same class as the owner of the high-class imported automobile for which a special hand-made body is required, and incidentally he pays for it. Yachtsmen require education. The exclusiveness which goes with a made-to-order boat is not essential to the enjoyment of the water and its sports. A standardized product is quite apt to be as good, or even better than many specially prepared jobs, the reason for this being, that the structural details have received more attention and any faults in earlier jobs were remedied and corrected long before the boats were placed on sale.

Comfort In Arrangement

Beauty of appearance, structural strength and speed are only a few of the requisites of a satisfactory boat. The convenience and comfort derived from life on board is dependent in a large measure on the arrangement of the living quarters. Whether the engine is so placed as to heat the cabin spaces or not is a vital factor. The location of berths and position of the galley all contribute their share to the success of the finished product.

head there are on the portside, a large galley equipped with an ample ice box, stove, sink, cupboards, and storage spaces for foods. On the starboard side there is an additional lavatory. A large saloon forward is suitable for use as a breakfast or dining room. The seats here are arranged to be made up into berths and four persons can be accommodated without difficulty. Quarters for the crew are in the extreme forward portion of the hull and two comfortable berths and lavatory are provided for their convenience.

The power plant as arranged in this boat is particularly effective and the two motors are well adapted to the hull. Each engine is a complete unit by itself and can be used independently of the other to drive the boat alone. A peculiarity which brings out the amount of power necessary to drive a boat is shown in the fact that one engine alone can drive the boat at 10¼ m.p.h., while the entire additional effort of the second engine will only increase the speed of the boat less than two miles per hour more. With both engines operating, the speed of the boat



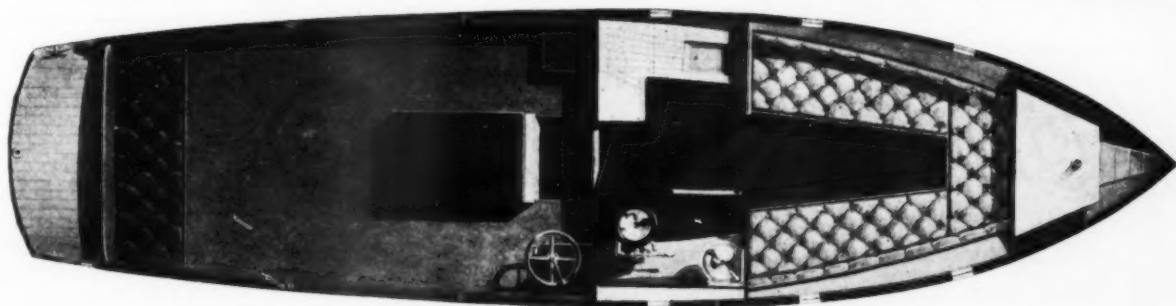
The 45-foot standardized cruiser is well arranged with large cabins forward and aft

is about twelve miles per hour, a relatively slight gain.

The 45-foot cruiser which has been built as a standardized craft for twelve or thirteen years by the Elco Company, is one of the most popular of the entire series. All the good points of the previous models have been incorporated in them from year to year, so that today they are at a high point of perfection. Large numbers of these boats are in service and the completeness and comfort of their arrangement makes them exceptionally popular.

The bridge deck portion of the boat which is directly over the engine room, is protected from the weather by a substantial wind shield and awning. In the forward por-

Perhaps the most popular of all the standardized cruising boats is the 34-foot Cruisette. This boat is among the pioneers in this branch of boat construction and has been very carefully designed with the sole idea of producing a safe and seaworthy boat under all weather conditions, and at the same time have a yachty and shipshape appearance. The arrangement of this boat has also been carefully worked out and includes within its dimensions every possible comfort which can be reasonably expected. The cockpit is large and has ample free space, while the engine is also accessible from without, underneath the raised portion of the floor. The cabin interior has a small toilet room forward



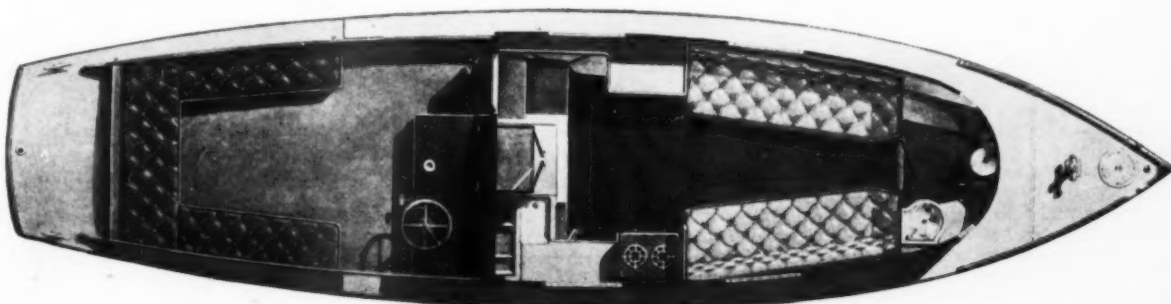
Most famous of the lot is the 34-foot standardized cruissette with cabin and cockpit

tion there is a main saloon fitted with two transom seats which can be made up as comfortable berths for the night. Two additional ones are arranged to hinge back and form the upper berths. A lavatory forward is very accessible and another at the stern serves the owner's private stateroom. This is arranged with two built in berths fitted with springs and mattresses and due to the large windows in the deck house, is assured of ample ventilation at all times.

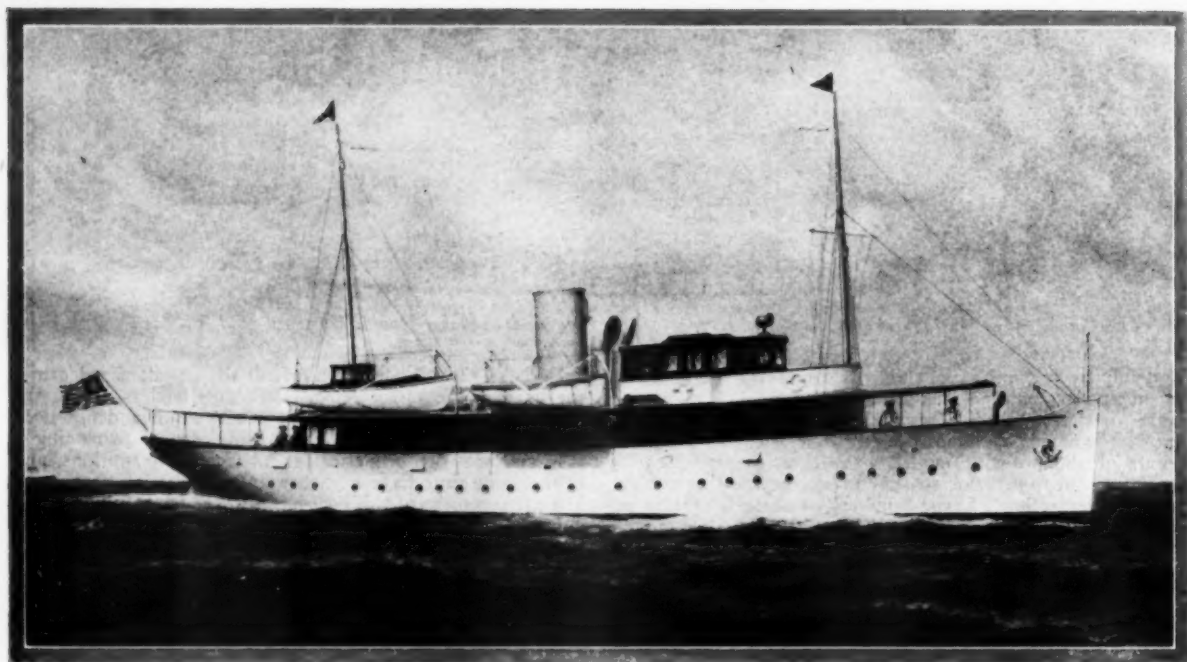
Under the bridge deck is the engine and head room is provided in this at the forward end. There is a comfortable berth here in case a paid hand is carried, and an abundance of locker space is built in, in all portions of the boat. The Elco engine is also used in this hull and is an ideal power plant in every particular.

with two transom seats with hinging backs, all fitted with springs and cushions. A convenient galley, equipped with a stove, sink, and ice-box, all compactly grouped on the starboard side, completes the appointments.

The newest of the standardized boats which the Elco Company is now building is the 30-foot Veedette. This boat is equipped with the same Elco engine in a high speed type, which makes this boat a very fast one, as it is designed to travel fifteen miles per hour, but on actual trials has exceeded this by a comfortable margin. This boat is arranged in similar fashion to most boats of its size and has a cabin and large cockpit. A comfortable galley is installed, as well as a sizable toilet room and lavatory. The engine is installed under a hatch in the cockpit where it is very accessible.



The newest of the Elco group, the Veedette, a well arranged 30-footer



Ripple is a 134-foot yacht powered with two six-cylinder Diesel engines

Ripple, A Cruising Diesel Yacht

Typical Modern Sea Going Vessel Designed Particularly for Business Cruises in Tropical Central and South America

TYPICAL of the development in modern seagoing Diesel vessels, the new yacht *Ripple*, now under construction for Clifford M. Leonard of the New York Yacht Club, from designs and under the supervision of Cox & Stevens, marks another step forward. This boat will be a yacht in every sense of the word, and has been designed especially for business trips in tropical oil fields in which Mr. Leonard is interested. Her length is 133 feet 9 inches and the beam 23 feet. She is fitted with a practically straight stem and a continuous and rather lively sheer. Her sections are powerful, with considerable flare forward.

Since the controlling thought in laying out the boat was to secure the utmost comfort and safety for the owner while at sea, the designers have paid especial attention to the strength and proper disposition of weights for seaworthiness. As extensive voyages are projected in warm climates, an unusually large cruising radius has been provided and extreme care given to all matters relating to comfort, particularly the matter of ventilation.

The machinery installation for this boat will be placed almost amidships, and consists of a pair of six-cylinder Diesel engines of the four-cycle type. These engines will develop approximately 300 h.p. each, and it is expected that the vessel will have a speed of at least twelve knots. Sufficient fuel will be carried in tanks, carefully placed and subdivided to give the boat a cruising radius in excess of 6,000 miles and water tanks and storerooms of ample size have been provided to meet the requirements of long voyages. Auxiliary equipment of ample capacity has been provided for and will include two Diesel electric generators of large capacity, all the necessary pumps and compressors for the operation of the engines, sanitary system, and other mechanical appliances, a forced ventilating system furnishing air for the quarters, and a hot-water heating plant.

Staterooms for the owner and for his guests are all on the lower deck aft of the machinery space. The owner's

own stateroom is at the forward end of this deck, separated from the machinery space by an entrance hall containing a private stairway to the upper deck, with a bathroom and large wardrobe, thus effectually shutting off all noise from the stateroom and permitting the owner absolute privacy, separating him completely from the staterooms of the guests.

On the main deck, which is continuous from stem to stern, and is of teak, there is a substantial steel deck house with a passage way of ample width on either side. Plenty of deck space has been provided not only forward and aft but throughout the entire length of the vessel. The dining saloon is at the forward end of the deck house with an inside passage way running aft to the living room. This apartment is large and opens out directly on an enclosed shelter space, which actually forms a portion of the open quarter deck. This space will be particularly attractive in bad weather when the open deck will be too exposed. Comfort and fresh air may be secured by the use of the enclosed space just aft of the living room which has the boat deck overhead and the sides of the house continued aft. The after end of this space, however, is left open.

Aft of the engine room enclosure and forward of the living room there has been arranged a library or owner's private deckroom to which he has ready access from the stairway leading directly to his own stateroom below.

A close scrutiny of the plans and the general design of this boat shows clearly that she is in all respects a sensible vessel of substantial construction, having ample beam, and of unusually heavy displacement for her dimensions. With her disposition of weights and the general features of her design she will unquestionably be a good sea boat and will be able to weather any ordinary storm at sea with comfort to those on board. It may be said that within the limits of her dimensions, the designers have secured a most excellent arrangement of quarters, without unduly sacrificing space for the crew and storerooms.

Ruth, A Smart Fisherman's Cruiser

Complete Design and Specifications for a Good Looking Substantial Cruiser of the Medium Speed Type

By John L. Hacker

Designed Exclusively for MoToR BOATING

OUR design this month is a very clever 33-foot cruiser which has been adapted from a successful design of a slightly larger boat which Mr. Hacker prepared some time ago. This boat has been arranged primarily as a satisfactory fishing boat, designed to be sea worthy, fast, and able to stay out in all weathers. It is probably too large a boat to be constructed by an amateur builder without a great deal of assistance, from both machinery and men. While cases are known where a boat as big as this has been built by some enterprising amateur, the feat is hardly to be recommended as it will take an enormous amount of time and energy for a single hand-d builder to undertake the work.

The arrangement of this boat is such that ample accommodation is available for general cruising. The arrangement of the berths is such that three persons can sleep very comfortably, and, if desired, an upper berth may be included over each of the main berths, which will provide for two additional persons. These berths normally can be used as backs for the seats, and when required can be raised and suspended by a chain or a cable and hook to the deck beams above. In addition the berth adjoining the engine will make a very comfortable place for a paid hand, if it is desired to carry one. Doors placed between the after and forward cabin will serve to separate the cabin space into several compartments, which will insure privacy at all times.

The galley is arranged for extended cruising, while the ice box can be filled from the outside. The entire arrangement has withstood the test of time and service and has worked out very satisfactorily. A stove has been called for to be placed in the galley space above the ice box. A two-burner stove has been recommended and the selection of the type is left to the desires of the future owner according to requirements.

The space in the cockpit aft has been particularly arranged to use wicker chairs rather than built-in seats. There is no objection, however, to installing a full seat across the stern and lining this with metal to form a fish box in case the boat is to be used for this purpose. If the seat is left open, the space underneath can be used for the storage of life preservers and similar equipment. A pocket of ample size has been provided for on both sides of the cockpit so that fishing rods and gear can be stowed away and be safe from harm. On the after deck a rail has been so arranged that fishing lines will clear all deck fittings, such as cleats, chocks, etc., and allow a free run for the lines. The fuel tanks have been installed under the after deck and are of ample dimensions. The two tanks have a combined capacity of about 120 gallons, which is more than enough to carry the boat for several days run. Large size filler caps are placed on the after deck, connected directly to the tank so that no time will be lost in re-fueling. Fresh water tanks, while not directly called for on the drawings may be installed at any convenient point and of such capacities as will best suit the requirements of the boat.

As the most suitable power plant for this little boat, a model 35 Kermath motor has been selected. The weight of this machine is only 950 pounds, but it is capable of

developing full 35 horse-power on a bore and stroke of $4\frac{3}{8}$ by $5\frac{1}{2}$ inches. It is expected that this engine will drive this boat at a speed of close to 12 miles an hour. Other motors can be installed equally well if desired, although it is advisable to restrict the weights of any power plant to something under 1,500 pounds. The combination of hull and specified power plant should result in a very efficient and seaworthy unit.

As prepared, the design is complete and in excellent proportions. Changes from the design should not be made without careful consideration. More boats have been spoiled in the building by unskilled designers attempting improvements, than can be counted. Any questions which might arise during the process of building will be answered by the Editor or by the designer of this boat. The specifications which follow are complete and should be closely adhered to.

GENERAL SPECIFICATIONS

The general dimensions of this boat will be: length overall 33 feet, beam overall 9 feet, draft 2 feet 6 inches.

General: This boat should be laid down in strict accordance with the plans and the specifications furnished. No deviation whatever should be made without first consulting the architect and with his full consent. All materials which enter into the construction are to be of the very best grade for the purpose intended. Workmanship is to be first class in every respect. All details shown on the plans and specifications are intended to correspond, each with the other. In case any work is shown or called for in one and not in the other, or vice versa, shall be considered as being contained in both and shall be done by the builder without extra charge.

Keel-stem: This member is to be shaped of a piece of $2\frac{3}{4}$ -inch white oak shaped as per plan. Stem to be of $2\frac{3}{4}$ -inch white oak and shaped as per plan. A knee, preferably of natural hackmatack or $2\frac{3}{4}$ -inch white oak to be used. Stem is to be through bolted to the knee with $\frac{1}{2}$ -inch galvanized bolts. The knee to be through bolted to the keel with same size bolts. There will be four bolts in each and these are to be well red leaded before making the fastenings. Rabbet stem and keel to suit the $\frac{3}{4}$ -inch planking on the side and the $\frac{7}{8}$ -inch on the bottom. Point the stem to $\frac{7}{8}$ inches. Apron to be made from $2\frac{1}{2}$ by $5\frac{1}{2}$ -inch white oak, rabbetted to suit the planking and drift bolted to the keel with four $\frac{1}{2}$ -inch galvanized rods over washers, or 8-inch lag bolts. Fasten a cheek piece on each side of the keel forward of the apron to make the same width. This to be of white oak and extend as far forward as possible. It should be through bolted from side to side with $\frac{3}{4}$ -inch galvanized bolts, spaced every 9 inches and to have a nail fastening in between. Fasten the strut into place and trim ready to set up. The extension keel is to be slightly tapered on the top edge and rounded off to reduce water resistance.

Transom and frame: The transom is to be covered with $\frac{7}{8}$ -inch mahogany and in three widths. It is to be supported with a side member of $1\frac{1}{4}$ -inch oak and four inches wide. There will be an upper and lower member of $1\frac{1}{4}$ -inch stock from 4 to 5 inches wide at the top and 6 inches wide at the bottom. Halve the side members into the others or make the fastenings in the same manner as the frames with a knee. There will be a 2-inch stern post the same width as the keel. Fasten the other members

Our Next Design

For next month Mr. Hacker has prepared a very clever design for a high class cruiser of the particular type in which he is so expert. This boat is designed to be very fast and able. It will make a fitting addition to the fleet of any yacht club and a boat of which any owner can be justly proud. The motor specified is the popular White Cap four cylinder, which will drive this boat at a rapid rate.

into this and support complete frame with a 1¼-inch knee on each side of the keel. It is to have a ½ by 2-inch batten let into the frame for the seam of the covering boards. The entire frame is to be riveted or screw fastened and the transom fastened to the frame in a like manner. All nail holes are to be wood plugged for a natural finish. The transom may be of oak if it is to be painted. All joints are to be covered with lead paint before making the final fastenings. This throughout on all joints.

Frames: All main frames are to be shaped from 1¼-inch white oak and of such dimensions as indicated on the plans. They are to meet with a bevel joint at the chine and to be bolted to a 1¾ by 3-inch piece of oak with at least five 5/16-inch bolts on each side. Frames are to be securely bolted with 5/16-inch bolts to an oak floor of such dimensions as indicated on the plan. These are to extend 15 inches each side from the center of the keel and when finished to be through bolted to the keel with ½-inch galvanized bolts, and to have two ¾-inch bolts through the apron into the rabbet. All frames are to be properly beveled to suit the run of the planking. After the frame is set up and the stringers in place, insert a steam bent frame ¾ by 1½ inches. These are to be of clear white oak and to extend from keel to sheer on the inside of stringers. Space between the stringers to be filled out with pine and to be tied across the keel with an oak floor, as indicated on the plan. They are to be securely screw or rivet fastened to the stringers and spaced equal distance between the main frames.

Chines: These are to consist of an inner and outer member. The inner member is to be shaped from 2 by 6-inch yellow pine. It is to be of select stock and in a single length. It is to be beveled to suit sides and bottom and to be through bolted to tie piece on frames, with two 5/16-inch bolts. Fasten in a like manner at the transom and with a substantial breasthook at the stem. The outer member is to be shaped from 1½ by 2-inch white oak securely fastened to the inner member with ¼-inch copper rod rivets.

Clamps and stringers: The sheer clamp is to be ¾ by 3-inch yellow pine securely screw fastened to the frames with 2½-inch screws, with a knee to the transom and a breasthook at the stem. The planking stringers will be ¾ by 1¾-inch yellow pine in a single length of select stock to be let into the frames and securely screw fastened to same with 2½-inch screws. The bottom stringers will be of the same thickness and 2 inches in width. All stringers are to be scraped approximately as indicated on the plan and the plank seam is to meet on centers of stringers.

Engine bed: The engine bed is to be arranged to suit the four cylinder model 35 Kermath engine and is to be of 2½-inch white oak, shaped as per plan. It is to be through bolted to the floors and supported by a 2-inch stringer extending from the engine bed to station No. 8. Stringers are to be securely bolted to the floors with sway blocks on each side. Bolts to be ½ inch in bed and ¾ inches on stringers.

Shaft log: Shaft log may be of metal or of oak and of such dimensions as indicated on drawings. It is to be well leaded and securely bolted through the apron and to be fitted with a No-bind type of stuffing box.

Frame in general: All work on the framing is to be executed in a first class manner in every respect. All joints are to be properly made and painted with red or white lead before final fastening. Keel, chines, etc., to be properly beveled to suit the lines of planking. Necessary stop waters inserted on knee and apron. Trim neatly and fair and then proceed with the planking.

Planking: The side planking is to be of a single thickness of ¾ inch and the bottom of ¾ inch cedar or cypress. It is to be of selected stock and in as long lengths as possible and practical to apply. All seams are to meet on the centers of planking stringers. Planking is to be spiled ap-

proximately as indicated on the plans and to be fastened to frames with 2-inch galvanized screws and to the stringers with galvanized screws or clinched clout nails. All holes to be counterbored and wood plugged. All butts are to be made on quartered oak butt blocks and to be not less than 10 inches in length completely filling the space between stringers, and to have at least eight fastenings on each side. To have approximately 3/32-inch seams on the sides and ¼-inch on the bottom. Seams are to be lightly caulked with spun cotton. Butts in adjacent planks to be at least 3 feet apart.

Bulkhead: There will be a watertight bulkhead at station No. 1 consisting of two layers of 5/16-inch white pine or cedar. These are to be laid diagonally with a layer of canvas duck in marine glue or heavy paint between. There will be three or four cleats running from top to bottom to fasten to. Provide an opening about 18 by 20 inches for access and provide a frame for same to be securely screw fastened to bulkhead with a gasket. Bulkhead is to be clinch fastened every 3 inches and the frame is to be lined with canvas duck before the bulkhead is applied. Provide a ½-inch stop-cock to drain in case of necessity.

Hull and finish: The entire hull is to be thoroughly dressed and sanded. All seams opened uniformly followed by a coat of hot oil throughout. This should consist of a mixture of pure turpentine and boiled linseed oil in equal parts and applied boiling hot. A coat of red lead priming paint on the bottom up to the waterline, and a lead based paint for the color above. There will be a priming coat of heavy paint throughout on the inside. After oil is applied, paint is to be mixed with lead in oil and then thinned to a proper consistency with turpentine. All seams in the bottom to be puttied with a mixture of dry red lead and spar varnish mixed with a consistency of putty. Seam composition to be used on the sides. The bottom to be finished with three coats of Valspar bronze and besides with three coats of a selected color. All work to be prepared by sanding well before the succeeding coat is applied.

Fenders: These are to be of oak or yellow pine and shaped from 2 by 2½-inch stock. They are to be of the V-type with allowance for a 1-inch half oval galvanized iron strip. This is to be securely screw fastened every six inches with galvanized screws. All joints are to be beveled. A fender is to begin at the stern approximately 1 inch above the water line, shaped from 2 by 2-inch stock tapering to a point at the forward end. It should extend from the stern to such a point forward where it will intersect the top fender. This is to be securely screw fastened or bolted and covered with galvanized iron, same as the top fender.

Deck beams and decking: The main deck beams are to be ¾ by 3-inch white oak seam to a proper radius and to be fastened to a 1¼ by 3-inch riser, which shall be securely fastened to frames, and through the clamp. The beams on after deck fastened in the same way. The hatch framing is to be done in a similar manner with 1¼ by 2½-inch oak trimmer to extend from forward cabin beam aft to the end of the cockpit. It is to be supported with knees securely screw fastened to the frames. It is to be properly trimmed and a ¾-inch mahogany covering board applied to the clamp, and a ¾ by 2-inch partner strip inserted into the beams. The balance of the decking is to be of white pine, cypress, or cedar. Apply the deck panels first to the center of partner, then dress and sand, paint, and apply the canvas. When finished, fasten covering boards permanently. Decking is to be nail fastened with screws to the partner. Insert the necessary blocks for cleats, bitt, etc., before decking. Putting coamings around hatches and lap the canvas, then paint well and apply the false coaming to make watertight.

Cabin-hatches: There will be a ¾-inch mahogany coaming screw fastened to the trimmers and forward beams as

(Continued on page 114)

The series of designs which John L. Hacker is preparing each month for readers of MoToR BoatinG is becoming more complete with each issue. The design this month adds another cruiser to the collection and rounds out the selection of available designs. The drawings published previously include the following:

Marybelle, 14-foot runabout
Gladys, 20-foot runabout
Margie, 31-foot cruiser
Miss Victory, 22-foot hydroplane
Miss Mississippi, 17-foot hydroplane
Miss A. P. B. A., 26-foot runabout
Lorraine, 16-foot runabout
Flapper, 18-foot runabout
Fleetwood, 22-foot runabout
Irene, 28-foot speedabout
Priscilla, 21 ½-foot monoplane
Suzette, 22-foot runabout
Chiquita, 23 ½-foot knockabout
Ruth, 33-foot fishing cruiser

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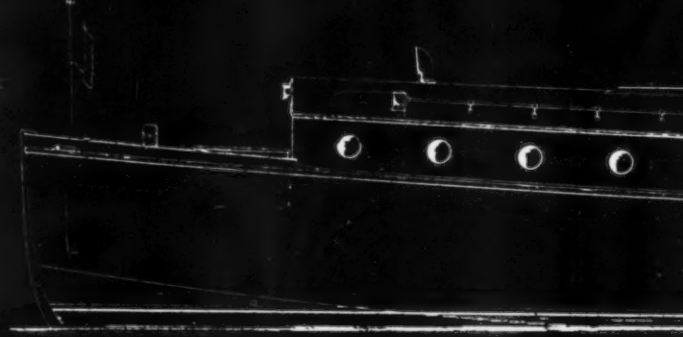
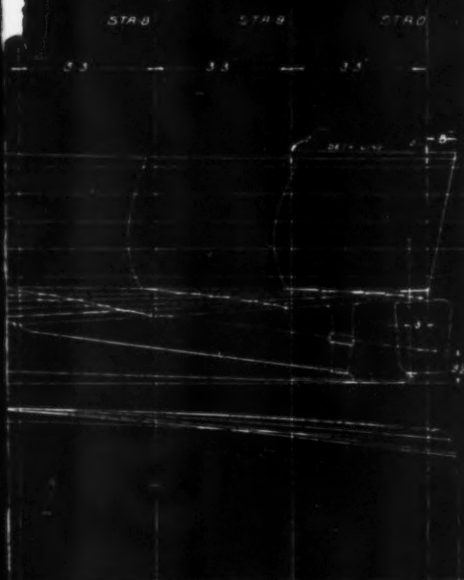
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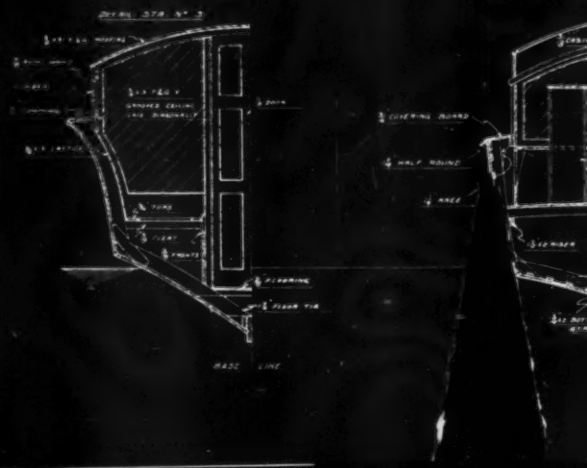
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119 WEST 40TH STREET
NEW YORK



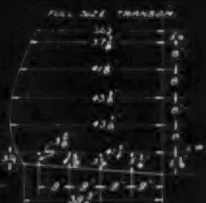
{ Length 33'-0"
Beam 6'-0"
Draft 1'-8"

SCALE
 $\frac{1}{4}" = 1'$

OF OFF SETTS

| 5 | 6 | 7 | 8 | 9 | 0 |
|---------------|--------|--------|--------|--------|--------|
| STRAIGHT LINE | 10.0 | 10.0 | 10.0 | 10.0 | 10.0 |
| 0-0.7 | 1-1.1 | 1-1.5 | 1-1.7 | 1-1.7 | 1-1.9 |
| 2-0.6 | 2-4.7 | 2-3.6 | 2-3.1 | 2-2.3 | 2-2.7 |
| 5-10.3 | 5-8.3 | 5-6.6 | 5-5.4 | 5-4.3 | 5-4.2 |
| 1-3.7 | 1-4.2 | 1-5.3 | 1-6.7 | 1-8.6 | 1-10.3 |
| 1-8.3 | 1-7.6 | 1-4.3 | 1-2.4 | 1-1.5 | 2-0.0 |
| 2-0.3 | 1-11.0 | 1-11.0 | 1-11.4 | 2-0.1 | 2-1.1 |
| 2-5.7 | 2-2.1 | 2-1.3 | 2-1.2 | 2-1.4 | 2-2.0 |
| HALF BREAKS | | | | | |
| 3-6.0 | 3-10.0 | 3-10.0 | 3-9.7 | 3-8.7 | 3-6.4 |
| 4-6.4 | 4-5.3 | 4-3.4 | 4-0.6 | 3-9.3 | 3-5.2 |
| 3-6.0 | 3-10.3 | 3-11.2 | 3-11.5 | 3-10.3 | 3-8.3 |
| 3-9.4 | 4-0.0 | 4-1.0 | 4-1.4 | 4-0.4 | 3-10.5 |
| 3-10.6 | 4-1.1 | 4-1.7 | 4-1.7 | 4-0.4 | 3-10.3 |
| 4-0.1 | 4-2.4 | 4-2.4 | 4-1.4 | 3-11.4 | 3-8.2 |
| 4-5.1 | 4-3.7 | 4-3.0 | 4-1.0 | 3-10.0 | 3-6.0 |
| 4-5.6 | | | | | |

SLICES FROM BASE LINE TO OUTSIDE OF PLANKING



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SMALL MOTOR BOATS

Their Care, Construction and Equipment

A Monthly Prize Contest Conducted by Motor Boatmen

Questions Submitted for the August Prize Contest

1. What type of mooring device do you find most useful? Give conditions under which used and size of component parts.
(Submitted by A. P., Pelham, N. Y.)

2. Describe any improvement on the usual messy job of draining a marine engine crankcase.
(Submitted by H. H. P., Oakland, Calif.)

How to Repair a Cracked Water Jacket

*Useful Suggestions for Effecting a Satisfactory Repair
So That the Life of an Engine May Be Prolonged*

Answers to the Following Questions Published in the April Issue

"Describe fully one or more tried out methods
of successfully repairing cracked water jackets"

Pipe Plugs for Repairs

(The Prize-Winning Answer)

THE neatest repair of a cracked water jacket I have seen, excepting, of course, a flame welded job, was done with $\frac{1}{8}$ -inch cast iron pipe plugs. To make this type of repair requires care and patience, but it makes a good looking and serviceable job.

To begin with, you will need a breast drill, a $\frac{1}{8}$ -inch twist drill, a $\frac{5}{16}$ -inch twist drill, a good sharp center-punch, a $\frac{1}{8}$ -inch pipe tap, a hack saw, file, and some $\frac{1}{8}$ -inch solid pipe plugs. These latter usually are solid cast iron and are readily obtainable and cheap in price.

By referring to the drawing it will be seen that the pipe plugs are inserted along the line of the crack, so spaced that they encroach on each other, or, in other words, overlap each other by about one-eighth of an inch. First carefully inspect the crack and determine its extreme ends. Mark about one-eighth of an inch beyond the one end and center punch sharply. Then space off accurately distances of $\frac{9}{32}$ inches along the length of the crack, going a little beyond the apparent end of the crack for safety and center punch accurately these spaces, which are then drilled through the jacket, being careful, however, not to drill on through the cylinder wall. These small holes will center and guide the larger $\frac{5}{16}$ -inch drill which is used later, also making the drilling an easier operation.

Now drill and tap the first hole and carefully insert the pipe plug. The tapping should be done so that the pipe plug will just extend through flush with the inside of the jacket wall, but no further. Do not screw the plug in tightly, but just enough to prevent turning while it is sawed off with a hack saw.

The tapped hole and the plug should be slushed with a solution of sal-ammoniac and water before the plug is finally screwed in. This will rust in the plugs to the jacket and make a permanently tight repair.

Now saw off the projecting end of the plug and drill and tap the next hole. This tapped hole should cut into the side of the first plug about one-eighth of an inch, see sketch. Be careful not to put too much strain on screwing in the plugs, as it will tend to loosen those plugs already in place. When all are in place dress the repair down smoothly with a file and paint over, and you should have

a repair that will endure anything but another freeze-up, which probably was the cause of the original trouble.

W. E. M., Philadelphia, Pa.

A Brass Patch Is Substantial

A CRACKED water jacket on a gas engine cylinder or exhaust manifold may be repaired in the following manner. After making sure that the inside of the cylinder is intact, the paint and grease should be scraped off to find out just the extent of the crack, so as to know just how large a patch may be needed.

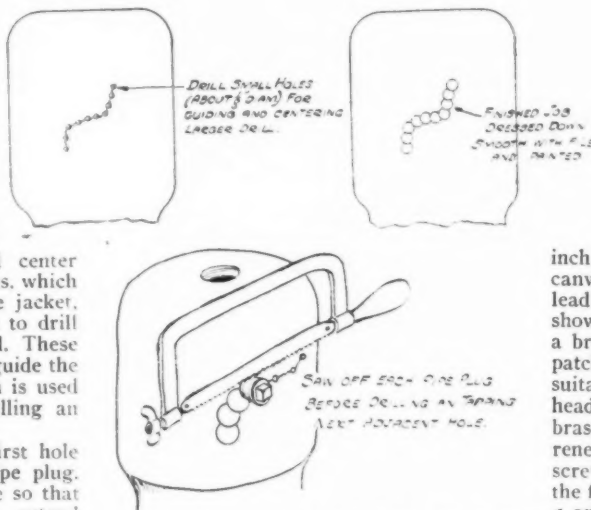
The patch should extend at least an inch beyond each end of the crack if possible, and from one to two inches each side as shown on sketch. A piece of soft sheet brass $\frac{1}{16}$ inches thick, or a piece of galvanized sheet iron of the same thickness, will make a patch which can easily be shaped to the outside surface of the cylinder casting. By getting the exact diameter of the cylinder, if there is a tin shop handy, this patch can be rolled to a neat fit to the casting, and save a lot of labor in shaping by hand to the proper radius.

When the patch is thus fitted, make a gasket of $\frac{1}{16}$ -inch thick sheet rubber or 10-ounce canvas soaked in thick red or white lead and place over the crack, as shown under the patch. Then with a breast drill, drill and tap through patch and through water jacket, suitable for a 10-24 or a 12-24 round head brass machine screw. Use brass, as the gasket may need to be renewed after a year or more and screws will come out easily. Place the first screw as shown on sketch at *a* and the next is shown at *b*; then proceed to drill and tap holes about $\frac{5}{8}$ inches centers apart, working from *a* and *b* as shown on sketch,

placing each screw as fast as the hole is tapped out, until the complete distance around the patch is covered, after which it is necessary to go over each screw and give it a final setting up.

Should there be a boss for a pipe connection in way of the patch, it will be necessary to cut a hole making a neat fit around the boss, and the pipe passing through same will have to be fitted with a lock nut which will be screwed down on a packing made of heavy canvas washers or grommets, soaked in thick red or white lead.

This method has been used several times with successful results. With the usual patience necessary for most jobs on a gas engine, a neat job will result. After being painted



An ingenious method suggested by W. E. M. for closing a crack in an engine water jacket

over, the appearance of the cylinder is not marred greatly. When first discovered, a break of this kind will give one a sinking feeling, but the repair is not as difficult as it seems.

C. S., Boothbay, Me.

Welding Has Advantages

THE welding of cast iron by the acetylene oxygen or oxwelding method, as it is called, and also by electricity is in such common daily practice that this plan should be considered in repairing a cracked water jacket.

The oxwelding method heats a generous portion of the casting to a high temperature, thus causing expansion and subsequent contraction that may tear the weld apart or cause a crack to develop in some other place. The success or failure of this plan will depend greatly on the extent and location of the crack. An experienced welder's opinion should be obtained before deciding on this plan.

If an electric welder is available this is the machine to use as the weld can be made without heating the casting to the extent that would cause trouble. Another plan would be to use the process in general use for repairing scored cylinder walls. There has been considerable secrecy about this process, but it consists essentially of a special hard solder and a good husky soldering iron or copper well heated. Cut a V shaped groove along the crack providing clean iron and a place for the solder.

This plan has not been tried so far as I know, but as this solder stays in the scores in the walls of the cylinders, where it has the oil and heat of combustion to contend with, I see no reason why it should not give perfect satisfaction on the outside of jacket, where the requirements are not severe. Any one that repairs scored cylinders should be able to make this repair at small expense.

Another plan for repairing a cracked jacket is to drill and tap a row of small holes along the crack. Screw threaded copper plugs into these holes, allowing the ends to come up against the cylinder walls inside of jacket. Saw the plugs off, allowing the ends to project slightly above casting, then peen or rivet over slightly and file off even. The holes should be tapped for about 1/4 or 5/16-inch diameter rod. They should be carefully laid out so the edges will just touch each other, and the best plan is to drill, tap and screw plug into each alternate hole, then come back and drill the intervening holes. The tools required are a small hand drill, a tap and die for threading the copper rod. Also a hack saw, file and hammer. When properly done this makes a perfectly tight job and when painted over is hardly noticeable.

Where appearances do not count a repair is easily made by simply putting a patch over the cracked place. Cut a piece of 16-gauge sheet iron so it will cover the crack, extending an inch or more all around. Bend so as to conform to shape of cylinder. Drill through plate and jacket and tap jacket for 12-24 round head machine screws, spacing screws about one inch apart all around edge. Put sheet

rubber gasket or cotton and thick lead paint under plate. Of course this repair does not look so pretty as some of the others, but it is effective and that's what some care most about.

C. H. C., Saginaw, Mich.

Several Successful Methods

A CRACKED water jacket on a marine motor is generally the result of neglect in draining the jacket in cold weather. Freezing water exerts a tremendous pressure and something must go. Occasionally a cylinder may be cracked by the unequal expansion when cold water is turned into the jacket of a motor overheated from lack of cooling water, or the damage may be the result of an accident.

The repair of a cracked water jacket depends largely upon the nature of the crack and its location. Internal cracks are the hardest to repair, and require more careful treatment than outside fractures. Welding or brazing makes the strongest repair, but is beyond the ability of the

average motor mechanic. Even an experienced welder finds this class of work requires most careful attention to secure satisfactory results. For internal cracks in the cylinder wall or combustion chamber the Lawrence process of welding, which insures a strong job and a true finish, is recommended. However, there are several methods available for repairing outside cracks, and the owner can generally do the work himself.

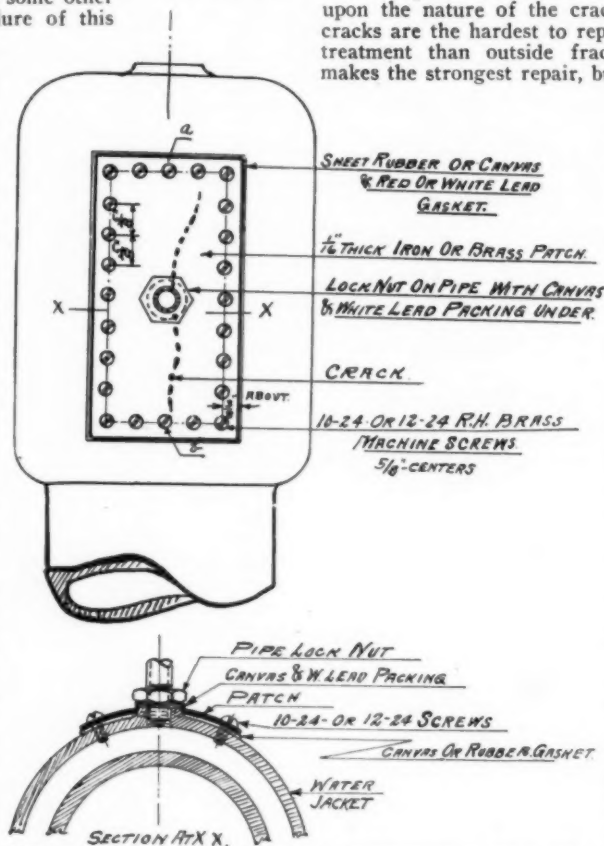
Where the crack is large or there seems danger of the repair not holding, apply a patch over the crack. Shape a piece of iron about 1 1/4 inches wider than the crack to fit the cylinder. Drill each side about 1 inch apart and tap the water jacket for No. 10 R. H. machine screws to check with the holes in the plate. Apply Smooth-On as above, coat the inside of the patch with cement and set up the screws. This method reinforces the crack. Screws used as explained later may be used to hold a broken piece in place, while the cement makes a tight joint. Space screws as required.

A small crack may be rusted up quickly by putting an ounce or two of salamoniac in enough water to fill the jacket and letting it stand in the jacket a few days. Automobile radiator cement will make a quick repair if circulated through the jacket. Another method of making a rust joint is to drill and plug each end to prevent extension and then work full of a mixture composed of 2/3 fine iron filings and 1/3 sal-ammoniac mixed with just enough water to make a paste which can be worked into the crack.

Satisfactory results are claimed for the following: Clean the inside of the jacket with a solution of hydrofluoric acid and wash the crack with a boiling hot solution of soda or potash to remove any grease or oil. Then fill the jacket with a copper sulphate (blue vitrol) solution, allowing it to slowly leak through the crack. If the crack is small so as to permit only a slight leakage it will be filled with a deposit of copper over night.

The results obtained with any method of repairing a cracked water jacket will depend upon the care and workmanship shown in the job.

W. B. M., Newburgh, N. Y.



Where the crack is of large size it is necessary to put a patch on, as shown by C. S. in these sketches

Lumber Guide for Amateur Builders

Timely Advice for the Boat Building Novice With Suggestions for the Selection of Most Suitable Materials for the Purpose

Answers to the following question published in the April issue

"As a guide to prospective amateur boat builders, describe the qualities and advantages of various woods generally used for this purpose"

Best Lumber for Boats

IN the construction of a boat there is need for lumber that has strength, some that possesses longevity and some that makes for beauty—that is their relation in order of importance.

Under no circumstances should kiln-dried wood be used, for kiln drying dries the wood too quickly making it brittle and lacking in strength and elasticity. Even when used in interior finish, where for the most part beauty is desired, it defeats this end by undue swelling and warping.

Air-dried lumber of the best quality should be procured and, if possible, months before it is to be used. It should be stored under cover, standing on end as far as it is possible, for in that position it will dry quicker and more thoroughly than if piled horizontally.

Get all the lumber needed on the first order—it will mean a saving in dollars and cents. In estimating for the amount needed, allow liberally for waste. Here again there will be a saving, for oftentimes in scrimping one finds himself lacking lumber at the end of the job, for which an outside price will have to be paid. In common with other construction work it is better to have some stock left over than not to have enough.

Incidentally it will be well for the amateur builder to remember that lumber comes in even lengths. The lumber dealer will furnish lengths of 9 feet, 11 feet, etc., but you will be charged for 10 feet and 12 feet, respectively. Another point worth remembering, one that will give you no little caste with the millmen, is to make your order for lumber call for inches in thickness, inches in width and length in feet, followed by the name of the wood wanted and the milling desired.

White Oak. In oak is found the ideal material for keel, deadwood, bow and stern posts, frames, carlines, in a word anywhere that strength is needed. In workboats it is often used for freeboard planking. It will work up well, hold all kinds of fastenings and is rendered very pliable by steaming. It rots very slowly even when exposed to alternate dampness and drying, in fact it has no equal among the hard woods. It will finish bright admirably and will simulate mahogany or teak with the proper stain applied. Connecticut oak, that with the gnarled grain, is superior to the so-called Western oak, but in these days it is hard to obtain. The days of live oak passed with the clipper ships.

Hard Pine. Next to oak, hard pine—Georgia, Southern, Carolina, Oregon, etc.—is much in demand where strength

is called for, but it is apt to be sappy in spots and splits easily if the holes for nails or other fastenings are bored too small. It is used extensively for cabin roofing, sheathing, cockpit flooring, bilge clamps and kells. It can be procured in long lengths that makes possible the planking of forty footers without any butting. It resists the wear and tear occasioned by the repeated hauling aboard of ground tackle almost as well as oak with a consequent saving in weight and cost. Even unpainted, it stands up well under repeated soakings, particularly in the decking of fishing craft.

White Cedar. For lightness, durability and slow drying out, white cedar is king, yet it does not possess strength in the sense of oak, pine or even cypress. It is extensively used in the planking of small boats, particularly tenders. Even with a thickness of a half inch or less, its tenacity for holding fastenings make it desirable for any kind of construction—carvel, clinker or lapstreaked. In common with oak and pine it will admit of being finished bright without undue raising of the grain. As a rule, it comes in short lengths and sometimes troublesome knots have to be bored out and plugged.

Cypress. Often called the wood eternal, lives up to its name. With ordinary care it will outlive the frame. It is stronger than cedar—that is, contact with a rock that would make a hole in cedar planking would result in little more than a dent in cypress. However, cypress has a particular affinity for water which makes it quick to swell as well as to dry out, a condition that makes the caulking in cypress planked boats comparatively short lived. This latter condition can be overcome by making the seams in cypress planked boats small and in not driving the caulking as solidly as with other woods. Cypress takes different stains admirably, but difficulty is encountered with the lifting of the grain. Like cedar, it is spongy enough to take all kinds of fastenings without boring.

White Pine. Clear white pine is much in demand for interior finish, panelling and the like. Properly dried, there is nothing that lends itself to a painted finish like pine. It works easily, resists dampness and possesses more than the average strength of soft woods.

Hackmatack. Years ago it was in much favor on account of its natural bends, and is still used in large boats, particularly work boats, but its failure to hold fastenings other than screws and through bolts makes it undesirable for small boat construction.

Spruce. Wherever extreme elasticity is needed spruce

(Continued on page 116)

Rules for the Prize Contest

ANSWERS to the prize questions for the August issue, addressed to the editor of MoToR BoatinG, 119 West 40th St., New York, must be (a) in our hands on or before June 25, (b) about 500 words long, (c) written on one side of the paper only, (d) accompanied by the senders' names and addresses.

The name will be withheld and initials used.

QUESTIONS for the next contest must reach us on or before June 25. The editor reserves the right to make such changes and suggestions in the accepted answers as he may deem necessary.

The prizes are: For each of the best answers to the questions on page 37, any article or articles sold by an advertiser advertising in the current issue of MoToR BoatinG of which the advertised price does not exceed \$25, or a credit of \$25 on any article which sells for more than that amount. There are two prizes—one for each question—but a contestant need send in an answer to only one if he does not care to answer both.

For answers we print that do not win a prize we pay space rates.

For each of the questions selected for use in the following month's contest, any article or articles sold by an advertiser advertising in this issue of MoToR BoatinG of which the advertised price does not exceed \$5, or a credit of \$5 on any article which sells for more than that amount.

All details connected with the ordering of the prizes selected by the winners must be handled by us. The winner should be particular to specify from which advertisers they desire to have their prizes ordered.



Primitive methods of unloading cargo are still in vogue at Iquique, Chili. Open barges are loaded along side steamers and then towed to shore

One Solution to the Export Problem

L. T. Snow, New Haven Manufacturer, Suggests the Establishment of a Machinery Depot at Panama to Bridge the Gulf Between the Americas

By Alfred F. Loomis

IF this article were to be merely an exposition of my personal ideas on the exporting of marine products to South America, I should hesitate to ask the reader to follow me. I might justly be reminded of the shoemaker and his last. As, however, it reflects the mature views of an acute, experienced manufacturer—L. T. Snow, president of the Snow & Petrelli Mfg. Co., of New Haven—I think I may legitimately claim attention.

Mr. Snow has recently returned from an extensive visit to the seacoast cities of South America, and while he went for pleasure he took his business instincts with him, and has returned with some personal knowledge of the problems which beset the American exporter of marine motors and accessories.

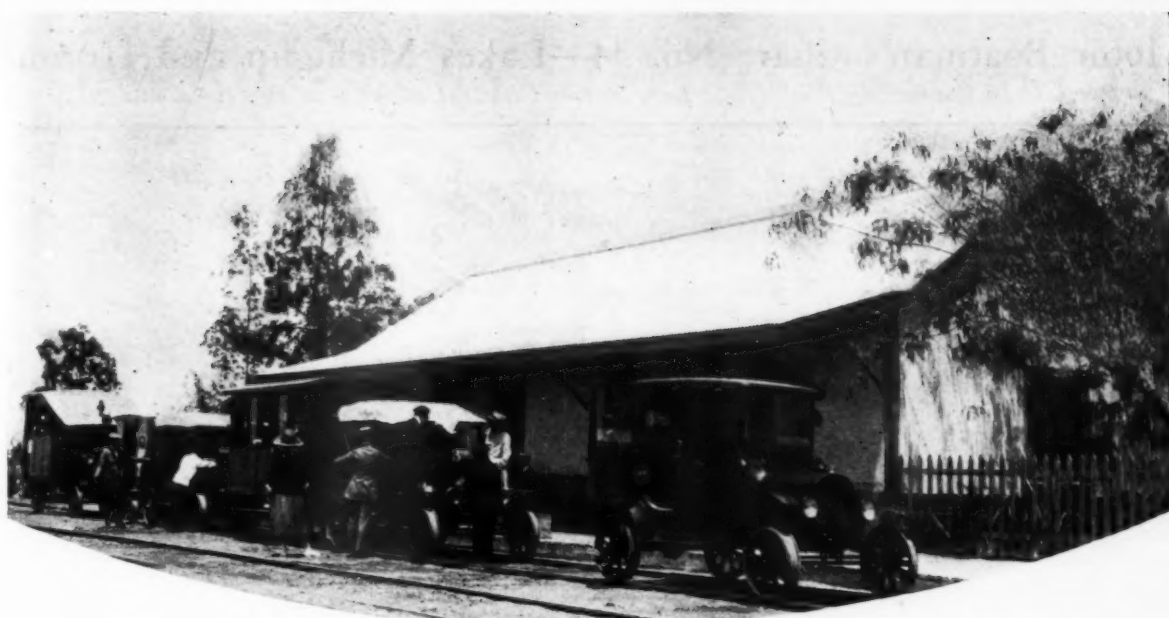
He has seen how the disparity of exchange handicaps both the South American importer and the North American manufacturer, he has learned how difficult it is for the South American to obtain needed supplies and replacements for his imported articles, and he has ascertained the obstacles to economic advancement in countries, where manufacturing is not developed, where gasoline is almost prohibitive in price, where ambition is lacking, and where nature yields a livelihood to such as have no inclination to work.

And Mr. Snow's program for development of our export

trade contains three major clauses—patience, education and better service. Patience is necessary because of trade conditions in most of the South American countries, arising from Europe's inability to absorb their products and to the heavy ratio of exchange. Under such conditions our manufacturers of marine motors and kindred articles must not expect great immediate success.

Education is a matter of vital importance on which topic it is well to employ Mr. Snow's own words. Said he, "Education is necessary not only on the part of the Latin-American people but of our own manufacturers as well. The aftermath of the great war seems to be more apparent in South America than in the U. S. and the custom of buying their manufactured articles mostly in Europe has been interfered with. The tastes and customs of the people are more European than American, and while they like our machinery, they do not like our ways of doing business. They consider that many of our manufactured articles lack the finish and individual taste of those made in Europe."

"No great progress can be made until salesmen who not only understand our products, but who are familiar with the South American languages and conditions can be sent into those countries. Of course, some of the very large concerns are doing just this, but it may be necessary for smaller concerns to establish co-operative selling plans in



The inevitable Ford is mounted on steel wheels and serves the railway between Arica and Tacna, Chile

these countries. With their vast natural resources, growing population and developments, their wants will multiply and the question of who will serve them depends upon how well we know and do our job and how well we demonstrate the value and dependability of our products."

Mr. Snow says further: "The question of better service is being partly answered by the steamship lines now running from the U. S. down both the East and West coasts. They are still much fewer than the English and European ships, but it is a great forward step to have high-class passenger and freight steamers to carry our merchandise and bring back products from South America. It is no longer necessary for a Brazilian merchant visiting this country to arrive via London, nor is it necessary for us to send our freight to him in foreign bottoms. It is to be devoutly hoped that our Congress will not be so short sighted as to curtail or kill the start that has been made in an American Merchant Marine.

"While the ports on the East and West coasts are fairly well served with steamships, the fact still remains that one of the great hindrances to our supplying our American machinery, etc., is the lack of depots at distributing centers, and the consequent great loss of time.

"If it were possible, for instance, to have at the Canal Zone a machinery depot and exchange, where quick shipment could be made, repairs kept to be handled by competent salesmen and engineers, it would make the distribution to the northern states and west coast of South America and to many of the Central American countries a matter

of days, instead of weeks or many months as at present. It would in many instances make it possible for purchasers to see what they were getting and be instructed in the operation of same."

This last suggestion of Mr. Snow's merits some elaboration. There are already many thousands of South Americans who own machinery purchased in the United States, and they find themselves like an attacking army that has been cut off from its supplies. If so small a thing as the collar of a marine engine or reverse gear wears out the operation of the motor is impaired for many weeks while the mail slowly carries a replacement order to the States and the necessary part back to the owner. If the piston rod of a marine or stationary engine breaks the entire power plant must lie idle for the same extended length of time. After a few experiences of this nature the South American is not to be blamed if he returns to the employment of primitive forms of power for his marine or agricultural pursuits.

From the standpoint of service to the user an ideal condition would be attained when every American exporter had established an owner's station in every South American city—Rio, Buenos Aires, Callao, Valparaiso, and so on. But from the economic point of view this is manifestly impossible. Comparatively few American exporters are financially able to maintain a complete service station in more than one southern city; and the great majority must be content with agents who admittedly know less about service than selling.

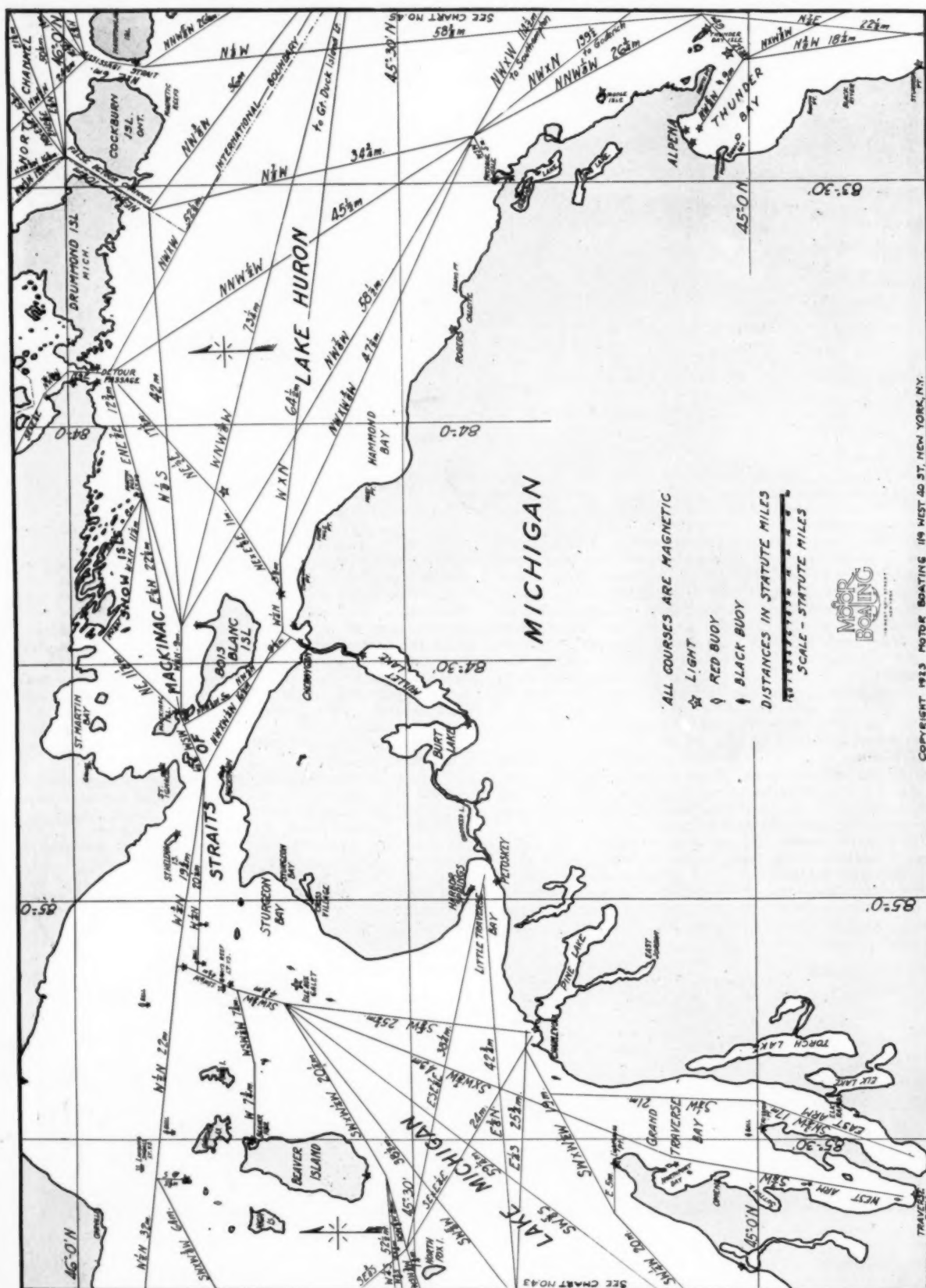
(Continued on page 92)



A view of the port of Paita in the northern part of Peru

Motor Boatman's Chart No. 44—Lakes Michigan and Huron

For Use In Connection With U. S. Lake Survey Charts, Catalog Nos. 6, 53, 54, and 70



Anybody Can Be the Pilot Now

An Accessory Navigational Instrument for Piloting Motor Boats and Yachts Through Fog and Darkness

By J. M. Le Grand*

THE object of this article is to explain a method and an instrument utilized with this method for the fixing and the keeping track of a ship's position from navigation aids even though they are not visible.

It is well known, of course, that the automatic log, revolution counter and other such methods utilized in measuring the speed of a vessel report only its speed through the water and not over the bottom, which is essential for purposes of piloting and navigation. One can readily understand the enormous differences that will exist wherein currents of from one to two knots are encountered, even though encountered on an angle, the components of these angles making an appreciable difference between the speed of the vessel through the water and the speed of the vessel over the bottom.

The Government maintains, at great expense, navigation aids such as light houses, light ships, buoys, beacons, etc., as well as an elaborate set of charts which are furnished at low prices. By utilizing a combination of the charts, the navigation aids, and the Pilotometer, a vessel can be safely piloted up a winding channel, through darkness and through fogs with sureness and accuracy. After very extensive investigations along the Atlantic Coast, the writer, in collaboration with Major William E. Hoke, devised a method for piloting which, for the popularity it has attained since its first introduction a few months ago, seems to fill a long felt want by the motor boatmen and yachtmen generally, not neglecting the oystermen and fishermen, who have been quick to grasp the utility of a method and instrument so suited to the piloting and navigation of small boats. The method referred to developed the instrument known as the Pilotometer. Manufacture was only begun a few months ago and the factory is still considerably behind in filling orders which have poured in from all conceivable directions.

The instrument consists of a pair of slotted brass bars with pointed ends and pivoted upon a sliding axis, which is held through saddles by a

clamp screw. It is 12 inches in length, made entirely of brass and bronze, and weighs about $\frac{1}{2}$ pound. It is used directly upon the chart. One end, which is marked with the letter T, is used for the measuring of time, and the other, marked with the letter D, is used for the spanning of distance upon the chart.



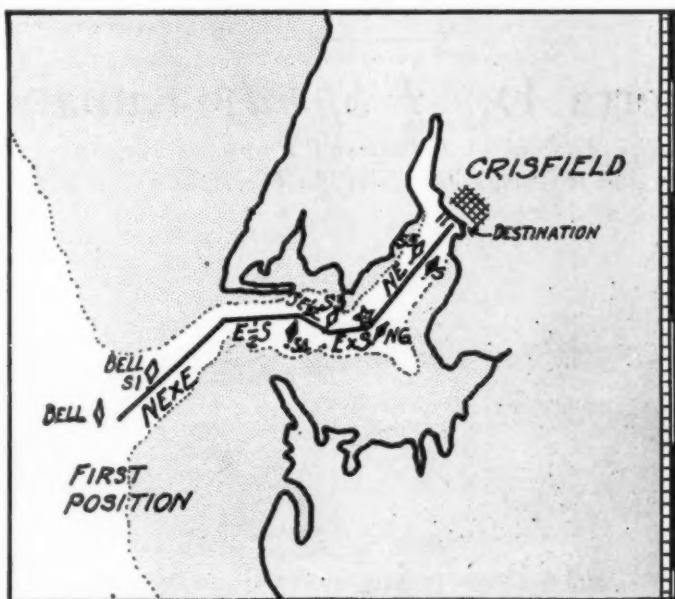
The Pilotometer consists of two slotted bars twelve inches long and pivoted on a sliding axis

In order to use the Pilotometer it is necessary for us to have available a time scale, and for this purpose you utilize the latitude scale printed upon the Eastern and Western extremities of the chart by assuming one minute of latitude or one mile of distance as being equivalent to ten minutes of time; this makes the smallest divisions on the scale, which are tenths of a minute, or tenths of a mile, equivalent to one minute of time each.

Of course, this scale is arbitrary and we frequently utilize a scale wherein one minute of latitude is equivalent to two minutes of time, etc., depending upon the speed of the vessel on the distances to be spanned upon the chart. The charts referred to are the U. S. Coast and Geodetic Survey charts, but the instrument may be used upon any other form of charts.

In order to fully illustrate the application of the Pilotometer the reader is requested to refer to the accompanying diagram, which is a typical river entrance. Let it be assumed that a cruiser of an approximate speed of from 12 to 16 knots is at the bell buoy shown in the diagram and it is desired to enter the river and proceed to the dock at the town of Crisfield. We will

assume that there is a dense fog and no buoy or other aids visible, unless close aboard. Starting from the bell buoy at 8:10 A. M., we proceed on the course N. E. x E. and take the time buoy S 1 is brought abeam on the port hand. Then we adjust the central thumb nut of the Pilotometer and shift the axis until the D end of the instrument spans the distance between the buoys and the T end spans on the latitude scale the time elapsed in making the run, which was one minute and forty seconds. The instrument is then calibrated for the run up the river. This course is continued to the first turning point, which is slightly beyond the

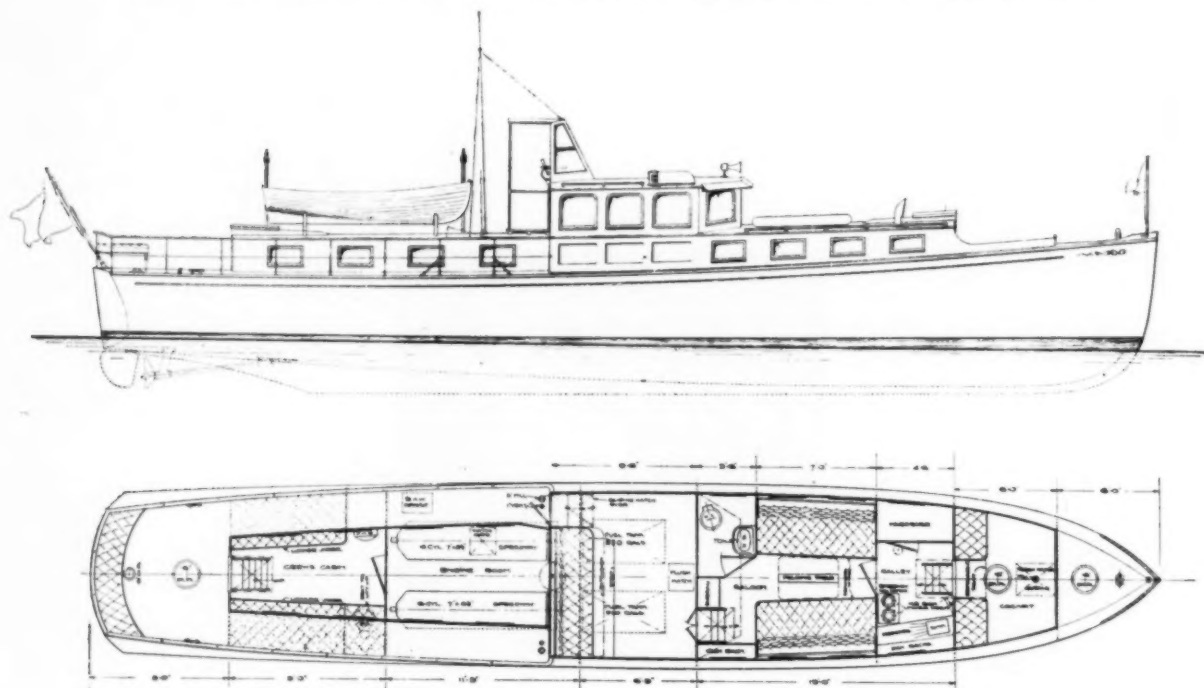


Typical river entrance chart, which illustrates the use of the instrument in piloting a boat into the harbor

*Associate Member, American Society of Civil Engineers, Consulting Engineer, Baltimore, Md.

Among the Season's New Ones

Boat Building Plants Throughout the Country Have Been Busily Turning Out New Boats Which Are Now Being Delivered to Their Proud Owners



AS evidence of the industry at the plants of the Consolidated Shipbuilding Corporation of Morris Heights, the first of a long series of new boats will shortly be turned over to its owner. This particular cruiser is a 62-foot express type, built for H. N. Slater of New York. The beam of this boat is 10½ feet, while the draft has been kept down to 3 feet. Generally the appearance of the boat follows the lines and type of Julius Fleischmann's Whirlwind and T. N. Howell's Pauline M, two

of the most successful boats of the last yachting season.

Since the boat is intended to be a high speed craft, a power plant consisting of two Speedway engines totaling 600 h.p., has been installed. With these a speed of 30 miles per hour is expected. In addition a ½ k.w. generating set will supply current for lights and appliances. High-grade materials have been used throughout in the construction of the hull which is entirely of selected cedar with mahogany trim.

Alberta D, A Speedy Runabout

Reliability Is One of the Strong Points of the Smart Sedan Runabout as It Covers 300 Miles Per Week the Summer Through



AS a typical example of the speed possibilities of heavy boats, Alberta D, a 37-foot sedan runabout is prominent. This boat, built for William S. Dana by the Elco Works, has been equipped with a six-cylinder Hall-Scott engine with which she develops from 36 to 37 m.p.h.

at 1,750 revolutions. The boat is heavily constructed with 1-inch planking and an extra steam bent frame at every fifth one. The economy of fuel is high since she travels better than two miles to the gallon, which is excellent for an engine of this size and capacity.

Why the American Power Boat Association

Many and Varied Activities of This Organization Are Rapidly Being Co-ordinated by Energetic Committees

By Frederick R. Still

President, A. P. B. A.

WHAT is the A. P. B. A.? It is an Association of Clubs to promote the use of boats, to improve their design and construction, to formulate rules so races and speed trials can be properly conducted and to promote the best interests of the members composing the clubs belonging to it.

It has taken an important part for many years in restraining unnecessary, undesirable and drastic legislation in nearly all of the state legislatures and in Congress. It has promoted activities leading to the improvement of aids to navigation on many of the important waterways. It has a Technical Committee of experts to answer all questions about boats or power plants and they are kept busy most of the time. It has a standardization committee which is in close association with the Automotive Engineers; this work is well under way and the forthcoming report at the next Annual Meeting promises to be complete and of immense value to the trade with, of course, corresponding benefit to the user, who will get a better product at less cost when the adopted standards are put into effect.

The American Power Boat Association was the first organization to formulate and publish in book form, standard national rules for conducting races. They have been copied in whole or in part by every other organization since their inception.

These rules are simply a guide; they are not compulsory; they are similar to an engineering code in as much as they show how to do a thing properly, if that is what is desired. All one has to do is to say that those rules apply. If some of them fail to meet local requirements, simply state the exceptions and insert their substitutes. They are not like a building code which must be arbitrarily followed whether one likes it or not, or perhaps, which fail utterly to cover certain specific conditions, as building codes frequently do.

Expressions of entire disgust with the American Power Boat Association rules are frequently heard, because of dissatisfaction with the results obtained here and there when races have been conducted under the Association's measurement Handicap Rules. Yet these same critics overlook the fact that the rule book of the Association provides "a whole flock" of other methods for handicapping and for Stunt Races, which include almost every known way a race can be conducted fairly and impartially.

While on the subject of Measurement Rules, there seems to be a serious lack of understanding what the results of such a race indicate. Perhaps a few words of explanation will clear the atmosphere and result in better faith in that method of handicapping, which in the final analysis is the only really fair and proper way to determine the correct time allowances for boats of unequal sizes, models and power plants.

The basis of the Measurement Rules and the Time Allowance Tables is what a boat should do if it is one hundred per cent perfect, according to the same standards of naval

architecture as are employed by every naval architect when he undertakes a contract to design a boat that will meet certain specified requirements.

It makes no difference whether one boat is 100 feet long and another 25 feet long; neither does it matter whether two boats of exactly the same length and model have power plants varying 50 per cent in capacity. The rules take all these things into consideration in the most scientific manner, according to the best data extant.

If the measurements of one boat gives a rating of say 63 (allowance 88.09 seconds for nautical mile) then she is 100 per cent at that rating. If she fails to make the speed that her rating gives her, then she is not as efficient as she should be, according to her model, displacement and power plant or else she has been badly navigated, or the wind, the waves, or the current may have affected her performance. On the other hand, if she performs better than her rating would indicate, then she is what might be called a Super-boat; that is: she is better designed and equipped than the commonly accepted standards of naval architecture would indicate as being possible for a boat of her type and measurement to perform, and she has also had very favorable weather and water conditions and very likely has also been most excellently handled.

Handicap races conducted under Measurement Rules should furnish food for reflection, investigation and tend to direct one's efforts to an endeavor to improve his outfit rather than to lead to criticism of either the Rules or of the Race Committee.

Nine out of ten times the loser has only himself to blame for his bad luck, for one or all of the following reasons:

1st. He was not fully prepared before the race started.

2nd. He made a bad start,

being slow getting over the starting line.

3rd. He steered a bad course.

4th. He did not use good judgment in selecting his course to take full advantage of wind, waves and current.

5th. He has never studied his boat carefully to see what effect slight modifications will have, even to the shifting of ballast, grinding of valves, new piston rings, etc.

A fifth of a second a mile on a 100-mile run means 20 seconds for that distance, or about 440 feet for a boat making 15 miles per hour, which is quite a gap between two boats at the finish. Yet think of how many times boats are nearly a minute late in getting over the starting line.

A good wheelman never allows his boat to yaw very far off from her course, because it requires more helm to bring her back again. The more the helm is applied to the rudder, the greater is the retarding effect on the speed of the boat. Every sailorman knows that fact and always bends his efforts to so trim his sails that his boat will foot fast and yet stay on her course with the least possible weather helm. Look behind your boat frequently and note how far from straight is the wake; then think how many additional feet this must represent (Continued on page 62)

A. P. B. A. Growing

THE motor boatmen of the country are to be congratulated on the election of Commodore Frederick R. Still as President of the American Power Boat Association. Without doubt he is the foremost authority on yachting activities and organizations in the country. Already, the new president has set the machinery in motion for bringing together all yachting interests of the country into one big strong organization for the good of all motor boatmen. Not only will racing interests be standardized but all branches of the sport will be promoted—legislation, technical, navigation and others.

However, no matter how worthy Commodore Still's intentions may be to accomplish much of a constructive nature, he can't do it alone. He requires the help of every individual yachtsman and every yacht club. The A. P. B. A. is an organization of yacht clubs. Nearly 150 clubs are now members and giving their support. There are several hundred clubs in this country which are not members but should be. If you are a Club member see to it that your Club makes application to join. W. D. Edcuburn, Hotel Addison, Detroit, Michigan is the Association Secretary.

—EDITOR.

Yard and Shop

Notes of Interest to Both Owner and Manufacturer

Nepenthe Arrives at Martinique

Word has been received that the Scripps powered motor cruiser Nepenthe, which Van Campen Heilner is taking on an extensive cruise through the Antilles, has reached Fort-de-France where it laid over for a time and then proceeded to Guadeloupe. There are five companions with Captain Heilner, and the cruise is proving a pleasant one to all. It will be remembered that mention of this adventurous trip was made in an issue of MoToR BOATING some months ago.

Edward Smith & Co. Increase Force

To cope with the demand for paints and varnishes, the Edward Smith Company, makers of varnish, colors, and enamel, have added L. T. Stevens to their sales force. Mr. Stevens has been in this business for over fifteen years and is well known throughout the trade. This is the fourth addition which has been made to the sales force since the first of the year and is necessitated by the rapidly increasing demand for the products of this company.

Magneto Service Stations

A neat little folder has been issued by the Robert Bosch Magneto Company, Inc., which lists all authorized United States representatives and service stations for their products. This list is very complete and up to date, and demonstrates the remarkable dis-



This neat little spot light is being produced particularly for the use of small motor boats where a handy and inexpensive lamp is wanted. Entirely of brass, this lamp is well adapted to marine service and will throw a powerful beam of light



The large water front at the Dachel-Carter Boat Company's plant at Benton Harbor, Mich., at which they are turning out standardized 21-foot sport models and 26-foot runabouts. The plant has a capacity for boats up to 125 feet in length, of wood or steel

tribution of these products throughout the country. The confidence of the dealers in their products is evident.

Schedule of 1923 Racing Events

- June 23-24—New York, Atlantic City and Return, Columbia Yacht Club, N. Y. and Atlantic City Yacht Club.
- June 30—Express Cruiser Championship of America, Cruiser Championship of Connecticut River, Middletown Yacht Club.
- July 1—Long-distance Race, Southern Yacht Club, New Orleans to Mobile, Ala.
- July 7—New York to Block Island, New York Athletic Club.
- July 15—Round Manhattan, New York Motor Boat Club.
- July 28-Aug 12—Chicago Regatta, International Trophy.
- Aug. 4—American Power-Boat Association Handicap Cruiser Championship of America, Philadelphia Yacht Club.
- Aug. 11—New York to Newburgh and Return, New York Motor Boat Club.
- Aug. 13-18—Annual Race Week, New Bedford Yacht Club, South Dartmouth, Mass.
- Aug. 29-Sept. 2—Gold Cup Regatta, Detroit Yacht Club.
- Aug.—28-foot 1100 Cubic Inch Class Runabout, National Championship Trophy, Lake George, New York.
- Sept. 3—150 Mile Sweepstakes Race, Detroit Yacht Club.
- Sept. 6-9—Toronto Races, Toronto Motor Boat Club.
- Sept. 13-15—Regatta of Buffalo Launch Club, Leary Trophy Race, Interstate Trophy, Buffalo, N. Y.

Prompt Delivery

Many sales of finished boats are being made by all the prominent boat builders in the east and one of their troubles is the prompt delivery to them of engines intended for their hulls. The Albany Boat Corporation, whose plant at Watervliet, New York, has been working hard, has delivered a number of new boats and is prepared to make a few additional deliveries between now and the first of July. Contracts for new boats cannot be executed

which promise deliveries earlier than next fall.

The co-operation of engine companies is particularly desirable at times like this, and they write us that the Wisconsin Motor Manufacturing Company, whose distributors they are, in New York State, have in several recent cases made a shipment of a motor on the day a telegraph

order was received. Service like this is particularly appreciated by both the builders and the boat buyers. Another instance was recited in which the Sterling Engine Company, busy as they are, made a shipment of a six-cylinder Dolphin engine on the day it was promised. In contrast to this is the experience in which another motor which they have on order has not yet been shipped, even though it is now two months over due. An unnecessary delay of this kind ties up the plant and delivery of the boat.

New Atwater Kent Plant

A new building costing in the neighborhood of \$1,000,000 is to be erected in Philadelphia by the Atwater Kent Manufacturing Company, to help supply the demand for their ignition and radio equipment. This demand makes necessary an expansion program, which includes this new plant. Work of erecting the first section of the building will be started at once and it will be occupied as soon as completed.

(Continued on page 100)



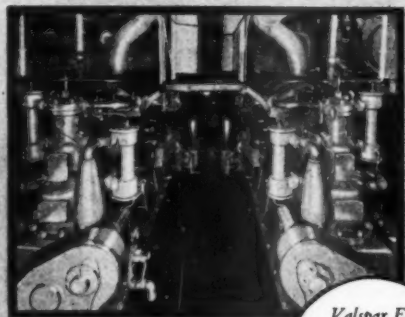
Working day and night, the factory of the Johnson Motor Company, South Bend, Ind., is shipping its motors in car load lots. The cut shows a full car load which has been sold and was sent out for immediate delivery

VALENTINE'S VALSPAR

The Varnish That Won't Turn White



A shady and comfortable retreat from the open deck. The woodwork is Valsparred of course.



Valspar Enamel helped to make the Engine Room of the "Ohio" spick and span in appearance.

Another Super-Yacht is Valsparred!

THIS TIME it's "Ohio," the new Diesel Equipped 178-ft. Super-Yacht, built by the Newport News Shipbuilding and Dry Dock Company. She's a marvel for construction—a sea-going type with every physical comfort for extended offshore cruising, and with powerful engines that assure smoothness and ease of motion.

In every respect "Ohio" represents the best in marine equipment—and that, in varnishes and enamels, means Valspar. Her bright work throughout is Valsparred, the outside of her hull is Valspar Enamelled.

Valspar is the waterproof, accident-proof varnish that never turns white. No matter how much it is exposed to weather and wear, it always retains its beautiful appearance and its tough, elastic protectiveness.

Where there are ships, there you'll find Valspar.

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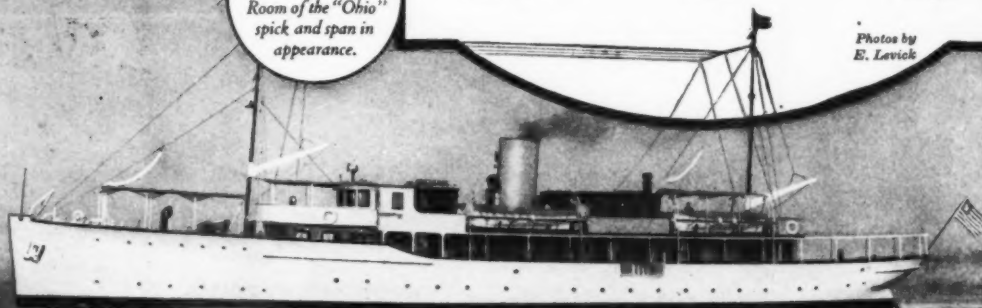
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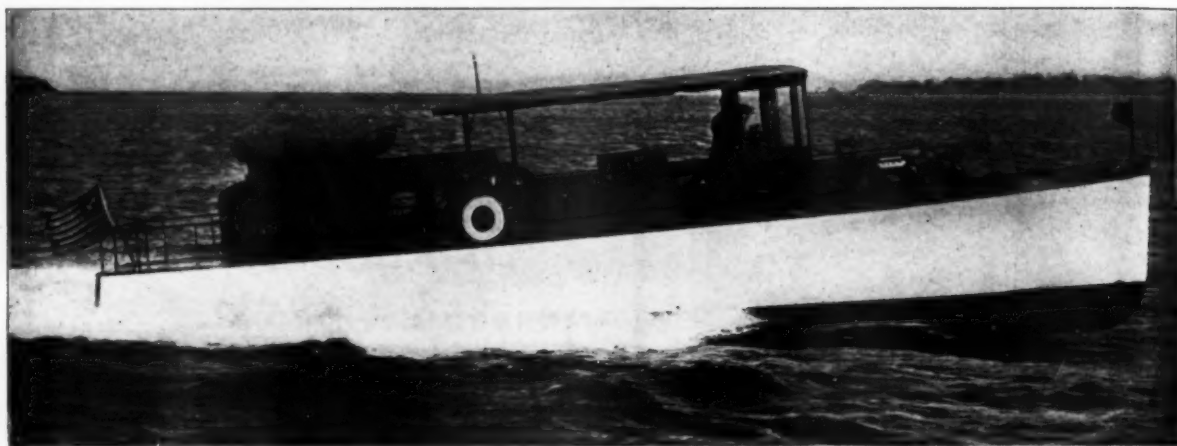
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*Photos by
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A 50-ft. twin screw motor yacht with sustained high speed, free of vibration, and remarkable seagoing qualities (as demonstrated by GAR JR. II in various long distance ocean races).

OVER 60,000 MILES WITH- OUT A BREAKDOWN!

That is the racing and cruising record of the GAR JR. II, holder of cruiser championships, and from which the GAR JR. FLYERS have been developed.



The roomy bridge deck and forward cockpit seat 12 persons.

Power plant consists of two twin-six "Liberty" motors developing 450 H.P. each, perfect in balance and control, absolutely reliable, and practically automatic in operation.



GAR JR. II completing record-breaking run from Miami to New York (outside route) 1260 miles at sea in 47 hours 23 minutes running time (21 min. less than schedule train time of famous "Havana Special")

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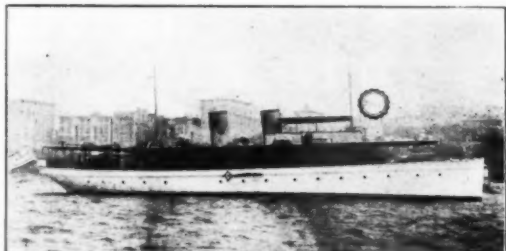
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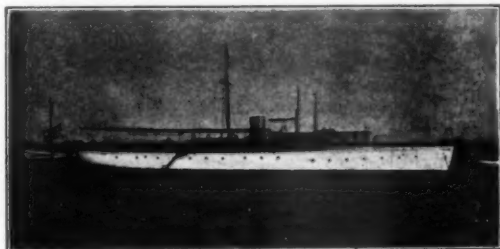
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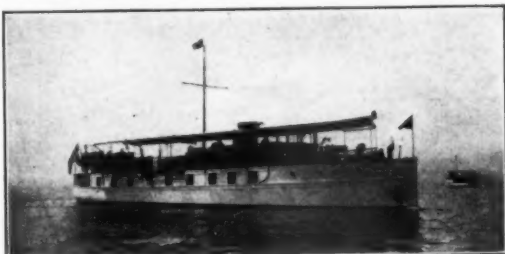
On this page are shown a few representative yachts selected from our large lists. Should none appeal kindly acquaint us with your requirements. Full information regarding costs to build, purchase or charter yachts of all types gladly furnished.



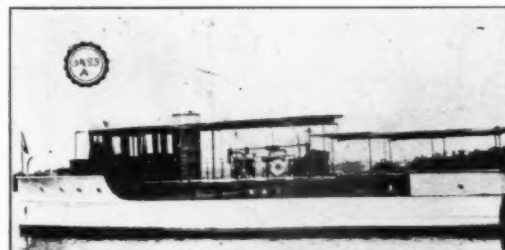
No. 3464—For Sale—Modern, roomy, twin screw, cruising motor yacht: 110' x 21' x 5.8'. Lawley built in 1917. Speed 12-13 miles. Two 100 H.P., 6 cylinder Speedway heavy duty motors. Splendid accommodation, includes large dining saloon, living room, galley and toilet room on deck. Five staterooms, two bathrooms below deck. All conveniences. In excellent condition. Available at attractive figure, as owner going abroad for extended period. Cox & Stevens, 25 Broadway, New York.



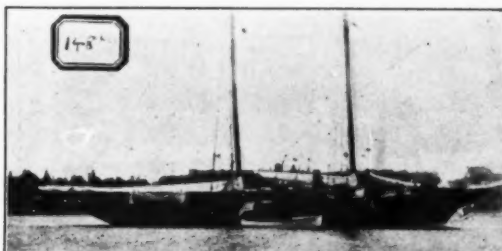
No. 885—For Sale or Charter—Handsome 120' twin screw steel motor yacht. Exceptionally able. Speed up to 17 miles. Two 225 H.P. 6 cylinder Winton motors. Splendid accommodations: Deck dining saloon, three double staterooms, besides saloon. Our design. Cox & Stevens, 25 Broadway, New York.



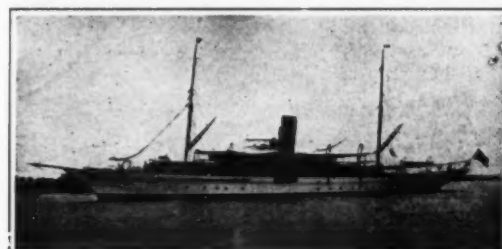
No. 1662—For Sale or Charter—Attractive 90-ft. modern power houseboat. All the comforts of a country home. Large saloon, four staterooms, two bathrooms, handsomely furnished. Cox & Stevens, 25 Broadway, New York.



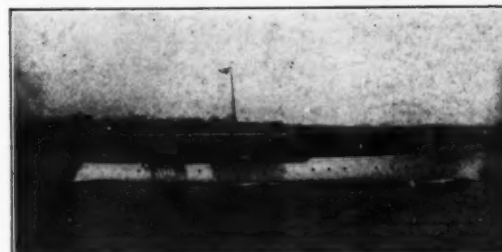
No. 3483—For Sale by Estate—Roomy and attractive 60' enclosed bridge deck cruiser. Speed 11 miles. 6 cylinder 75 H.P. "20th Century" motor new 1922. Two double and one single stateroom, saloon, large galley, two toilet rooms (one with foot tub). In excellent condition throughout. Further particulars from Cox & Stevens, 25 Broadway, New York.



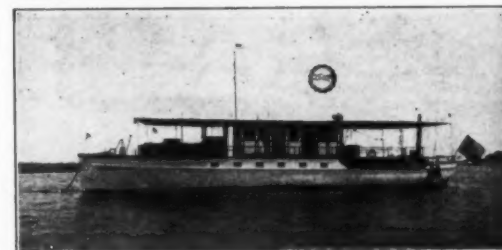
No. 148—For Sale at Low Figure or Charter—Steel, seagoing auxiliary schooner yacht: 131' overall, 110' waterline, 26' beam, 15' draft. Speed under power 10 knots. Large accommodations, including roomy saloon, five staterooms, three bathrooms. Splendid deck space. Remarkably able vessel. In 1920-21 large sum spent for many improvements and replacements. Opportunity to secure remarkably able vessel in excellent condition at genuine bargain figure. For plans and full particulars apply to Cox & Stevens, 25 Broadway, New York.



No. 841—For sale or Charter—Large, sea-going steam yacht. Palatial accommodation. Unusual opportunity. Several similar larger and smaller available craft. Cox & Stevens, 25 Broadway, New York.



No. 970—Exceptional Bargain—98 ft. Lawley built twin screw cruising power yacht. Speed up to 16 miles. Standard motors. Deck dining saloon, three double and one single staterooms, two bathrooms, etc. Teakwood deck house and deck trim. Cox & Stevens, 25 Broadway, New York.



No. 2502—For Sale or Charter—(In commission.) Remarkably roomy twin screw semi-houseboat cruiser, 73' x 16.6' x 3'. Speed 11 miles. Two 20th Century motors (new 1922). Saloon and stateroom with double berth in deckhouse. Below forward are main saloon, two double and one single staterooms, shower bath, toilet, also dining saloon. Available at attractive figure. Cox & Stevens, 25 Broadway, New York.

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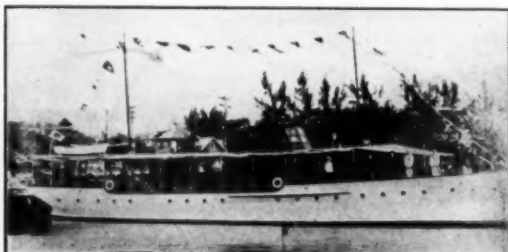
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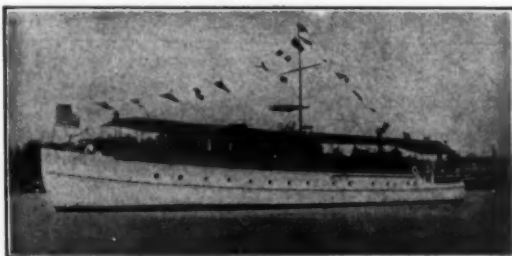
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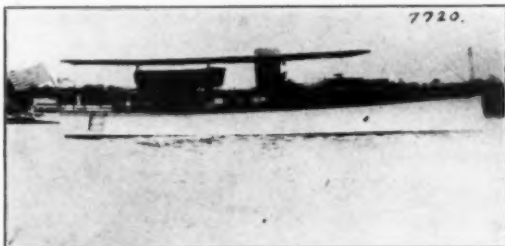
No. 7866—For Sale—Florida Delivery—Ninety-five foot twin screw, modern, up-to-date yacht, specially adapted for Florida cruising; just returned from cruise to Cuba; big bargain. Full particulars upon application to H. J. Gielow, Inc., 25 West 43rd St., New York City. Telephone: Murray Hill 9134.



No. 7896—For Sale—Most attractive sedan day cruiser. Gielow designed. Lawley built, mahogany planked, Speedway engines, 18 mile speed, used but very little, price attractive. Further particulars furnished upon application to H. J. Gielow, Inc., 25 West 43rd St., New York City. Telephone: Murray Hill 9134.



No. 8067—For Sale or Charter—Desirable twin-screw cruising houseboat suitable Florida and Northern waters. 68 ft. x 16 ft. x 3 ft. 6 in. 20th Century motors. Boat entirely overhauled and refitted 1920, three double and one single staterooms, saloon, deck saloon, sleep 8. Electric light and heating plants new 1920. Bath, two toilets. Has cruised Florida each year, good sea boat. Reasonable. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



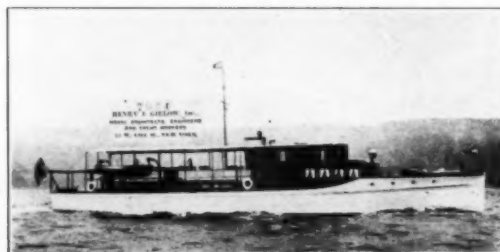
No. 7720—Unquestionably the finest cruiser for sale as to construction, finish, completeness and accommodations for size. 54' x 11' 4" x 3' 3". Never in Government service. 50 H.P. Twentieth Century motor overhauled Fall 1922. Speed 12 miles. All deck trim and interior teak and mahogany. Equal new. Double stateroom and saloon sleep 4-6. Large galley, crew quarters and engine room, all full headroom. Offered at half cost of duplicating. Owner gone abroad. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



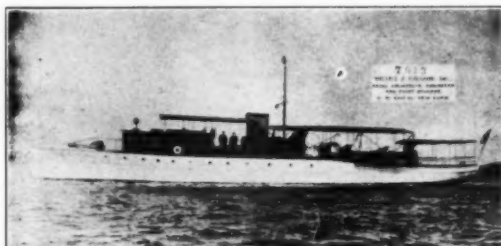
No. 7047—For Sale—Mighty-four foot twin screw, high speed ferry cruiser, specially designed for this work. Sterling Engines, speed up to 30 miles per hour. Double planked hull in splendid condition. Big bargain. Act quick. Full particulars upon application to H. J. Gielow, Inc., 25 West 43rd St., New York City. Telephone: Murray Hill 9134.



No. 7907—For Sale—58 foot raised deck power yacht, built especially for New York-Bermuda races. Most substantial construction used throughout. Has proved wonderful sea boat. Standard engine recently overhauled by builders. New storage batteries, awnings, bedding and upholstery. Has spacious owner's stateroom aft, with engine amidships, crew's quarters, galley and engine room forward. Owner reports boat in splendid condition. Price attractive. Full information Henry J. Gielow, 25 West 43rd St., New York City.



No. 7054—For Sale—In commission, most attractive 81 ft. twin screw power yacht. Two double and single staterooms. Pullman berth in lobby. Bathroom and toilet room. Two 150 H.P. motors. Speed 15-16 miles. Large deck house and enclosed bridge. All in excellent condition throughout. Henry J. Gielow, Inc., 25 West 43rd St., New York City.



No. 7013—For Sale—Opportunity to buy only Diesel yacht available at reasonable price. 110' x 18' x 6' 6". Copper sheathed, heavy construction, an able seagoing yacht in fine condition. Three large airy staterooms, bath, deck saloon. Two 6 cylinder Diesel motors at speed 10 knots, fuel consumption 10 gallons per hour. Cost sixty cents per hour. 2500 mile radius. Electric fans, screens, ice machine, three toilets. Has twice cruised West Indies, last one made 1922. Entirely overhauled. Henry J. Gielow, Inc., 25 West 43rd St., New York City.

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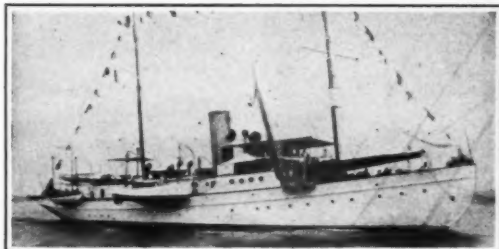
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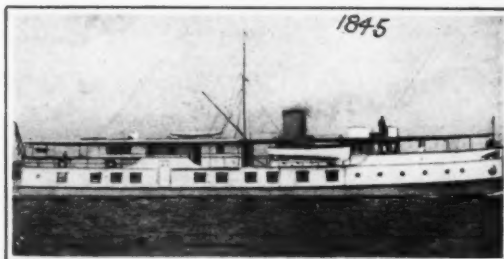
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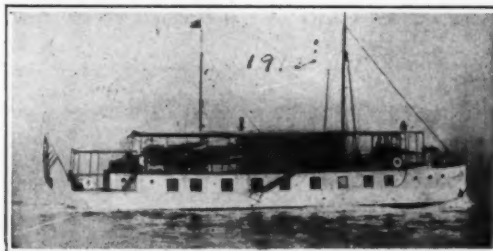
No. 265—Sale—Ocean-going steam yacht—158' x 127' 7" x 24.8' x 12' 9" draft. Built 1913. Commodious owner's accommodations—Completely and thoroughly overhauled, refitted and refurnished under our supervision in Fall 1920.



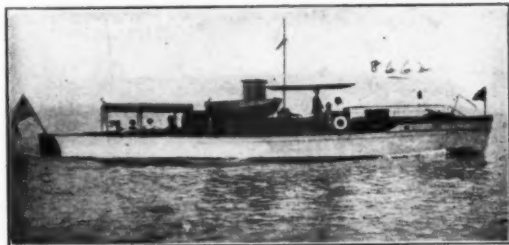
No. 1845—Sale—Modern Triple Screw Houseboat—120' 9" x 21' x 3' draft. Designed by Tams & King and built in 1920—3 Melts & Welas Oil Engines—6 staterooms, 4 bathrooms, dining saloon, deck sitting room, etc.



No. 8150—For Sale—Price attractive—110' single screw off-shore motor yacht, 6 cylinder, 220 H.P. Standard motor. Three staterooms, two being double, saloon and sitting room, bathroom, galley, engine room and crew's quarters. Inspectable New York waters.



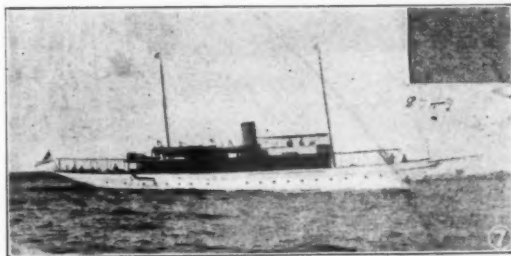
No. 1012—Sale—Charter—Attractive 77' Houseboat—250 H.P. Standard Motors—Speed 11 miles—4 staterooms, dining saloon, deck saloon and 2 bathrooms.



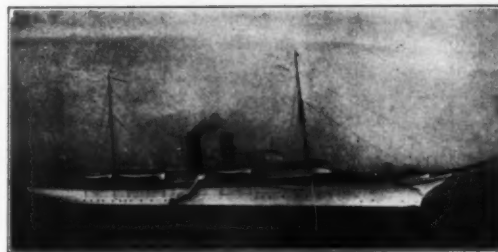
No. 8662—Price reasonable. Twin screw 60' fast cruiser. Two 90 H.P. Sterling motors. Inspectable Maine waters.



No. 8978—For Sale—Raised deck semi-day cruiser. 200 H.P. Sterling motor. Speed 20 miles per hour. In the very best of condition. Price reasonable.



No. 8749—For Charter—Largest motor yacht available for charter, 154' x 20' x 7' draft. Two 200 H.P. Winton motors. Six owner's staterooms, four bathrooms, maid's room, dining, music and sitting room.



No. 145—For Sale—Charter—Price attractive, fast twin screw ocean going steam yacht, 252' overall, 28' 6" beam and 14' draft. Nine staterooms, seven bathrooms and six saloons. In good condition and fully equipped.

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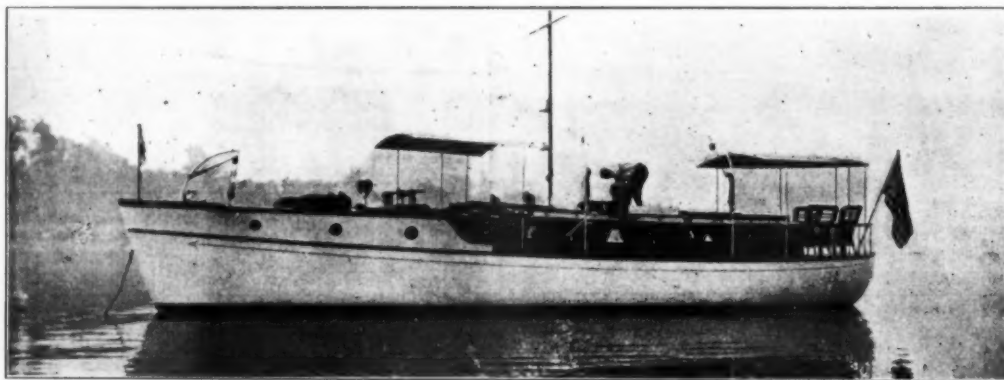
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No. 700—For Sale—Bridge deck cruiser designed and built by the New York Yacht Launch & Engine Co. Dimensions, 45' x 10' x 3'. Twentieth Century engine, 30 H.P. heavy duty type. Fine large double stateroom, also saloon 14' long, with four berths. Most desirable type and will not remain on the market a month. Must be seen to be appreciated. Apply RIGG'S YACHT AGENCY, 350 Madison Avenue (at 45th Street), New York City.



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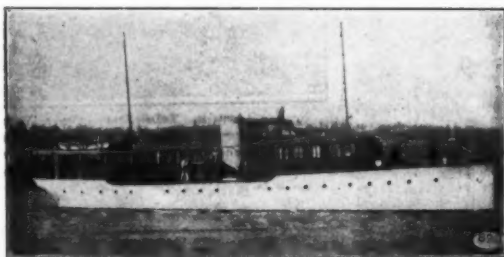
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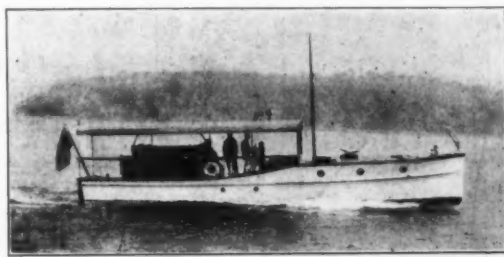
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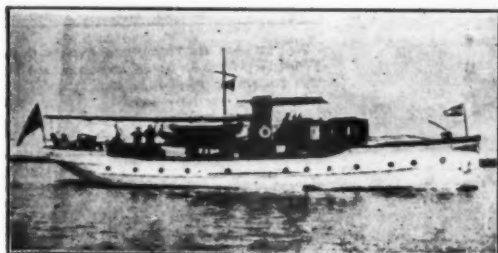
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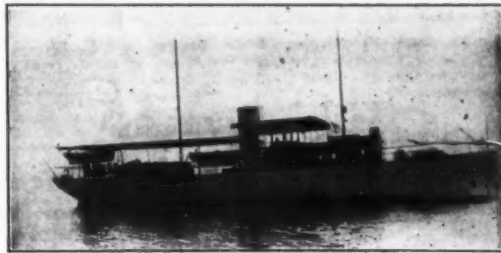
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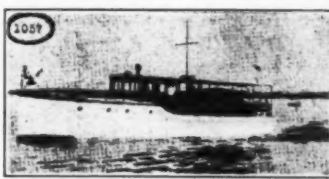
No. 560—For Sale or Charter—75' x 14' x 4' 6" gasoline cruiser built 1915. Sterling powered. Very able seaboat, excellent accommodations below and on deck. Has deck dining saloon, two large staterooms, large main saloon and bathroom. Located Great Lakes. Reasonable price. Henry C. Grebe & Co., Inc., 6 North Michigan Ave., Chicago, Ill.



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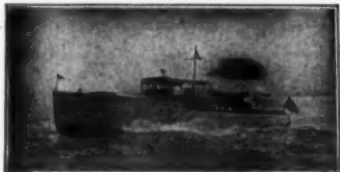
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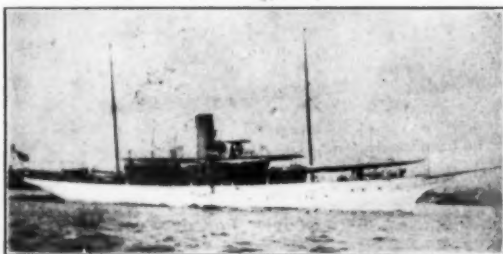
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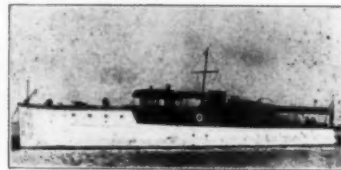
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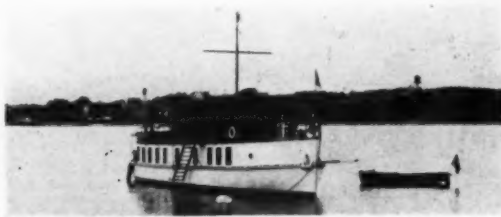
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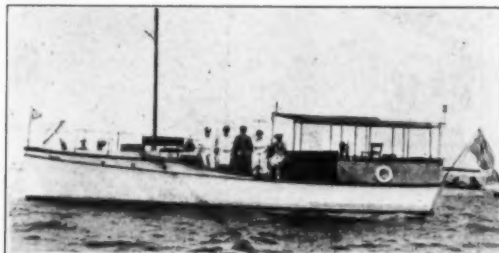
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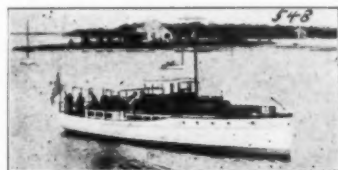
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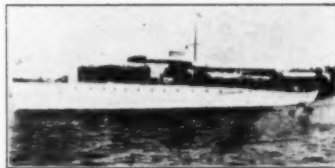
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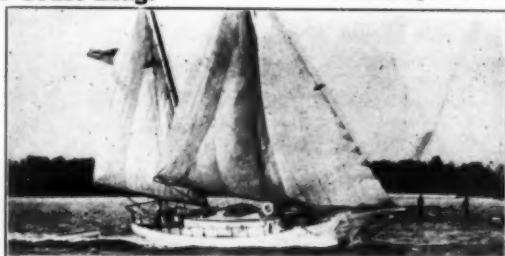
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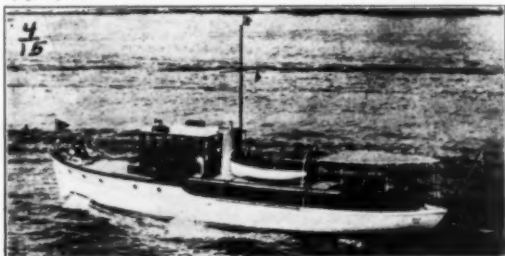
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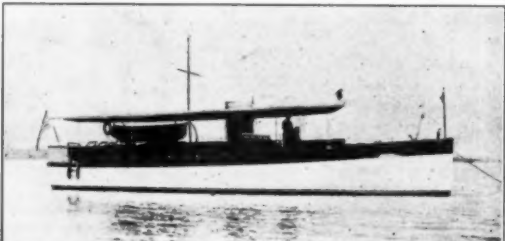
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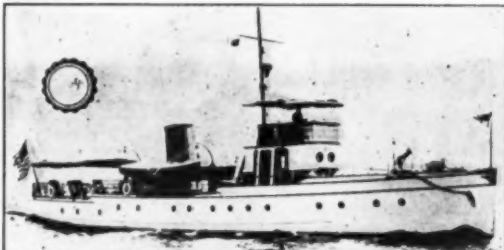
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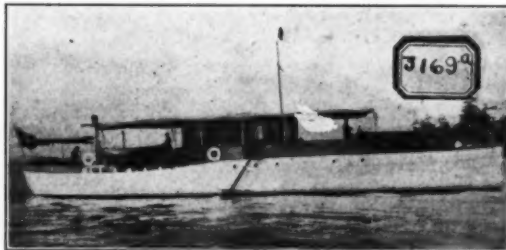
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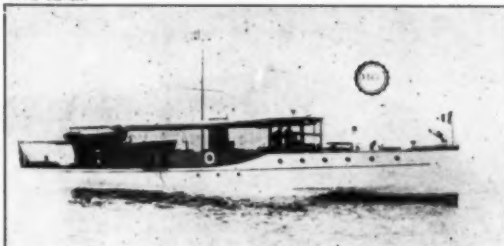
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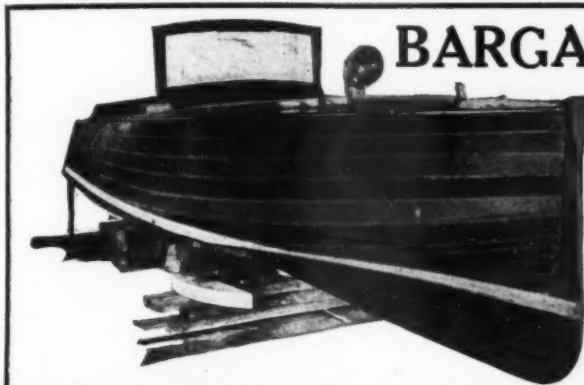
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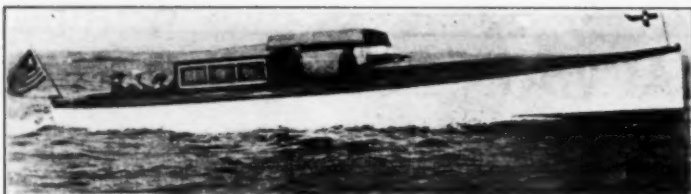
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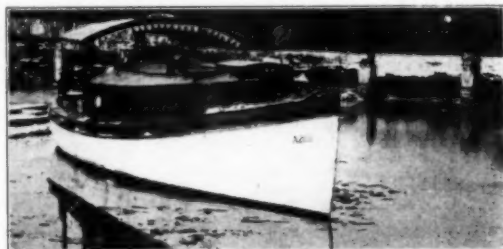
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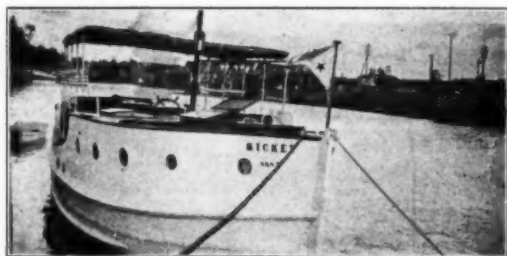
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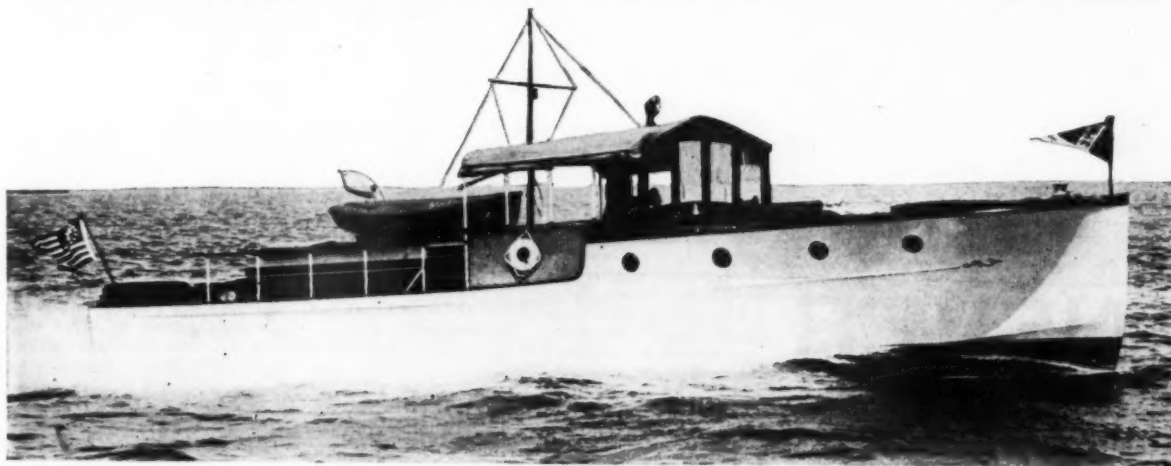
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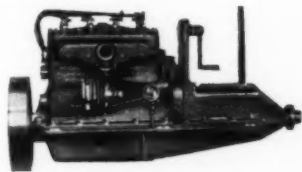
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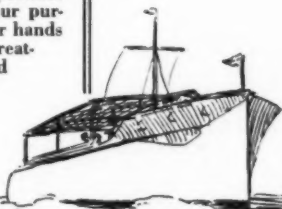
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Why the A. P. B. A.

(Continued from page 45)

over a distance of 100 miles, to say nothing of the retarding effect the rudder has had on the speed.

If you do lose a race under Measurement Rules, think over what happened before and during the race. If you will be fair in your analysis of yourself and your boat and as critical of your own shortcomings as is the usual attitude of a contestant toward the Rules or the Race Committee, it will not be hard for you to profit by the race to a far greater extent than if you had won first prize. It may not carry with it so much immediate glory, but if you will conscientiously endeavor to perfect your boat and the way you handle it, you will gain more glory eventually.

Many clubs claim they are too poor to afford the dues in the A. P. B. A., giving this as their excuse for not joining. The dues are \$10.00 a year for each 100 members, with a maximum fee of \$30 for a club of any size over 200 members. This only amounts to ten cents a member a year for almost any club up to 300 members, as there are scarcely any clubs having less than 100 members. But even if there were only 25 members in a club, it would only cost forty cents a member for one year. If this fact and the benefits to be derived could be personally presented to every member in all the clubs of this country, probably none of them would hesitate to pay ten cents a year to help support an organization which has for its object the promotion of interests so vitally affecting their pleasurable recreation.

The greatest potentiality of any Association is in large numbers when pressure has to be exerted on any pending measure, especially against proposed objectionable legislative enactments. There may be long periods when it may seem as though no direct benefit is being derived from an association like this, but when the time arrives for action, then having the proper machinery available, backed by large numbers, its effectiveness is immediately noticeable and the results are invariably worth more than it has ever cost to sustain it.

Take for example a gasoline tax. Most of such proposed bills are aimed at automobiles, but they affect every motor boat owner, who derives no direct or indirect benefit from it, as none of the money raised by the tax goes to improve waterways, harbors, lights or buoys; most of it goes to the improvement of the highways. If this Association were composed of 500,000 members, would not such a body of men impress those to whom we appealed for consideration? The difference in the cost of five gallons of gasoline, whether or not such a tax goes into effect, will pay one year's dues of an individual club member.

No club can afford to refrain from joining. To belong is just as necessary as to carry a fire insurance policy on the club house. Any five or more clubs in one section in North America, or any three clubs having an aggregate membership of more than 500 members, may form a local section of this Association, which becomes practically self-governing and can adopt local rules to meet its requirements. Get together and do something. Join us in this work. Don't wait. He who hesitates is lost.

The office of the Secretary, W. D. Edenburn, is located in the Addison Hotel at Detroit, Michigan. Applications for membership should be sent to him.

Advertising Index will be found on page 135

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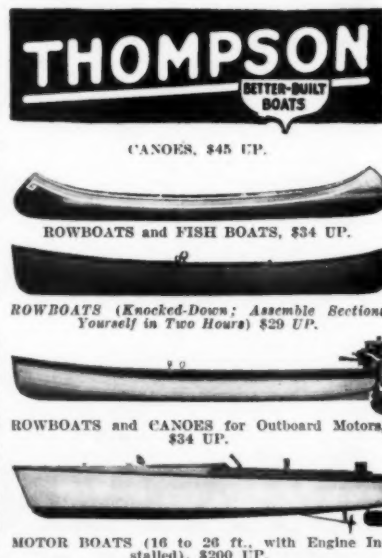
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ROWBOATS and FISH BOATS, \$34 UP.

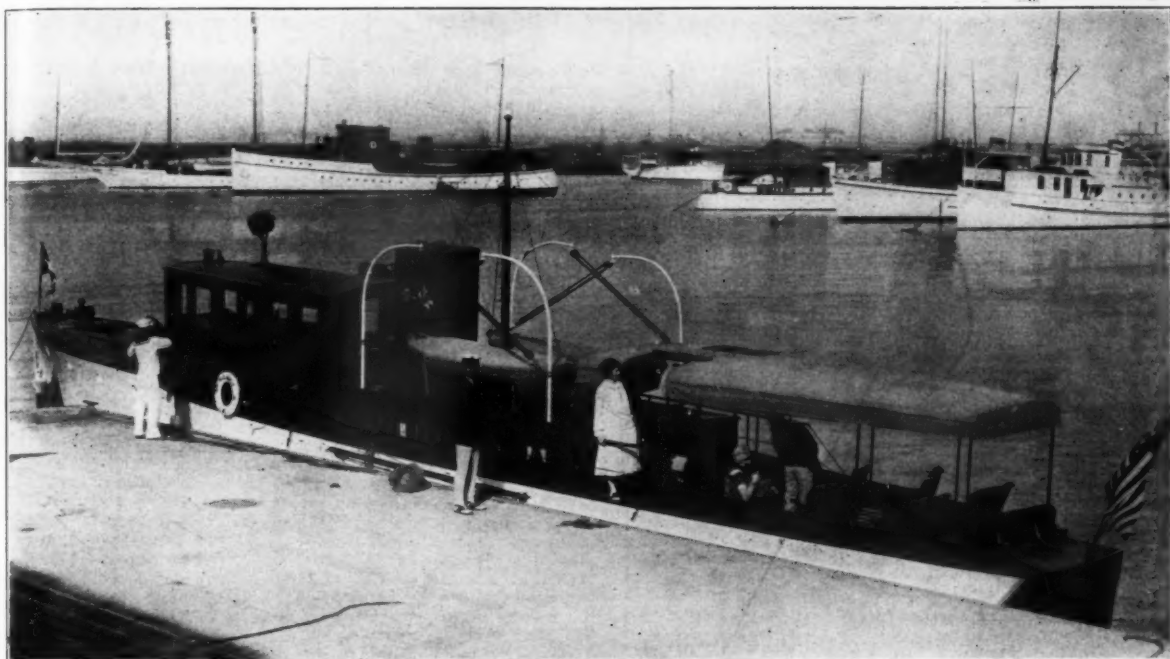
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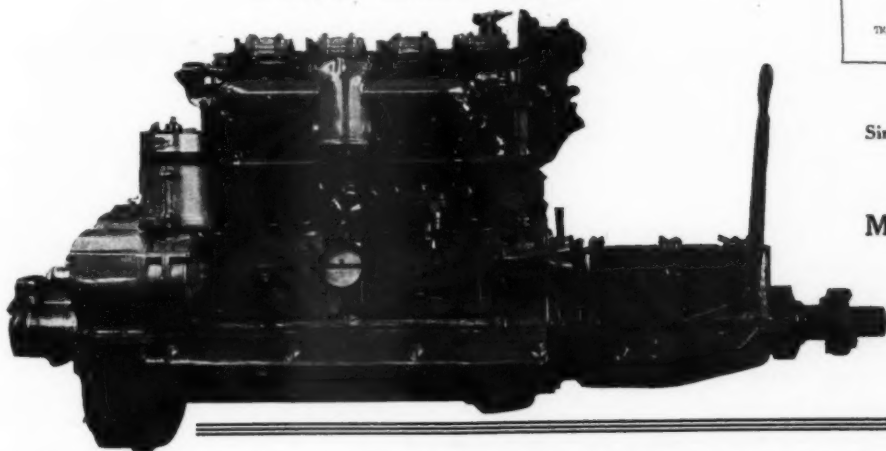
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Dear Sirs:

I appreciate very much the service which your Mr. Hoyt rendered on the Hall-Scott Motors which I have in my boat "Miss Mixit", and wish to thank you very kindly. The motors are in fine running condition, which greatly increases my enthusiasm in the boat. I intend to go in for this sport quite extensively and you may be sure that I will use Hall-Scott motors.

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The Duplicity of Captain Scraggs

(Continued from page 15)

long blast, Mr. McGuffey had whistled Scraggs on the engine room howler; swearing horribly, he had demanded to be informed why in this and that the skipper didn't leave that dod-gasted whistle alone. It was using up his steam faster than he could manufacture it. Thereafter, Scraggs had used a patent foghorn, and when the honest McGuffey had once more succeeded in conserving sufficient steam to crawl up river, the tide had turned and the Maggie could not buck the ebb. McGuffey declared a few new tubes in the boiler would do the trick, but on the other hand, Mr. Gibney pointed out that the old craft was practically punk aft and a stiff tow would jerk the tail off the old girl. In despair, therefore, Captain Scraggs had abandoned bay and river towing and was prepared to jump overboard and end all, when an opportunity offered for the freighting of garden truck and dairy produce from Halfmoon Bay to San Francisco.

But now a difficulty arose. The new run was an "outside" one—salt water all the way. Under the ruling of the Inspectors, the Maggie would be running coastwise the instant she engaged in the green pea and string bean trade, and Captain Scraggs' license provided for no such contingency. His ticket entitled him to act as master on the waters of San Francisco Bay, and the waters tributary thereto, and although Scraggs argued that the Pacific Ocean constituted water "tributary thereto," if he understood the English language, the Inspectors were obdurate. What if the distance was less than twenty-five miles? they pointed out. The voyage was undeniably coastwise and carried with it all the risk of wind and wave. And in order to impress upon Captain Scraggs the weight of their authority, the Inspectors suspended for six months Captain Scraggs' bay and river license for having dared to negotiate two coastwise voyages without consulting them. Furthermore, they warned him that the next time he did it they would condemn the fast and commodious Maggie.

In his extremity, Fate had sent to Captain Scraggs a large, imposing, capable, but socially indifferent person who responded to the name of Adelbert P. Gibney. Mr. Gibney had spent part of an adventurous life in the United States Navy, where he had applied himself and acquired a fair smattering of navigation. Prior to entering the Navy he had been a foremast hand in clipper ships and had held a second mate's berth. Following his discharge from the Navy he had sailed coastwise on steam schooners, and after attending a navigation school for two months, had procured a license as chief mate of steam, any ocean and any tonnage.

Unfortunately for Mr. Gibney, he had a failing. Most of us have. The most genial fellow in the world, he was cursed with too much brains and imagination and a thirst which required quenching around pay-day. Also, he had that beastly habit of command which is inseparable from a born leader; when he held a first mate's berth, he was wont to try to "run the ship" and, on occasions, ladle out suggestions to his skipper. Thus, in time, he had acquired a reputation for being unreliable and a wind-bag, with the result that skippers were chary of engaging him. Not to be too prolix, at the time Captain Scraggs made the disheartening discovery that he had to have a skipper for the Maggie, Mr. Gibney found himself reduced to the alternative of longshore work or a fo'castle berth in a windjammer bound for blue water.

With alacrity, therefore, Mr. Gibney had accepted Scraggs' offer of seventy-five dollars a month—"and found"—to skipper the Maggie on her coastwise run. As a first mate of steam he had no difficulty inducing the Inspectors to grant him a license to skipper such an abandoned craft as the Maggie, and accordingly he hung up his ticket in her pilot house and was registered as her master, albeit, under a gentlemen's agreement with Scraggs he was not to claim the title of captain and was known to the world as the Maggie's first mate, second mate, third mate, the quartermaster, purser, and freight clerk. One Neils Halvorsen, a solemn Swede with a placid, bovine disposition, constituted the fo'castle hands, while Bart McGuffey, a wastrel of the Gibney type but slower-witted, reigned supreme in the engine room. Also his case resembled that of Mr. Gibney in that McGuffey's job on the Maggie was the first he had had in six months and he treasured it accordingly. For this reason he and Gibney had been inclined to take considerable slack from Captain Scraggs until McGuffey discovered that, in all probability, no engineer in the world, except himself, would have the courage to trust himself within range of the Maggie's boilers, and, consequently, he had Captain Scraggs more or less at his mercy. Upon imparting this suspicion to Mr. Gibney, the latter decided that it would be a cold day, indeed, when his ticket would not constitute a club wherewith to make Scraggs, as Gibney expressed it, "mind his P's and Q's."

It will be seen, therefore, that mutual necessity held this queerly assorted trio together, and, though they quarreled

(Continued on page 66)



*"You folks come over
and listen to the music!"*

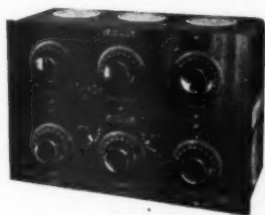
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The Duplicity of Captain Scraggs

(Continued from page 64)

furiously, nevertheless, with the passage of time their own weaknesses and those of the Maggie had aroused in each for the other a curious affection. While Captain Scraggs frequently "pulled" a monumental bluff and threatened to dismiss both Gibney and McGuffey—and, in fact, occasionally went so far as to order them off his ship—on their part Gibney and McGuffey were wont to work the same racket and resign. With the subsidence of their anger and return to reason, however, the trio had a habit of meeting accidentally in the Bowhead saloon, where, sooner or later, they were certain to bury their grudge in a foaming beaker of steam beer, and return joyfully to the Maggie.

Of all the little ship's company, Neils Halvorsen, colloquially designated as "The Squarehead," was the only individual who was, in truth and in fact, his own man. Neils was steady, industrious, faithful, capable, and reliable; any one of a hundred deckhand jobs were ever open to Neils, yet, for some reason best known to himself, he preferred to stick by the Maggie. In his dull way it is probable that he was fascinated by the agile intelligence of Mr. Gibney, the vitriolic tongue of Captain Scraggs, and the elephantine wit and grizzly bear courage of Mr. McGuffey. At any rate, he delighted in hearing them snarl and wrangle.

However, to return to the Maggie which we left entering the tule fog a few miles north of Pilar Point:

Captain Scraggs and The Squarehead partook first of the ham and eggs, coffee and bread which the skipper had prepared. Scraggs then prepared a similar meal for Mr. Gibney and McGuffey, set it in the oven to keep warm, and descended to the engine room to relieve McGuffey for dinner. Neils at the same time took the course from Mr. Gibney and relieved the latter at the wheel. By this time, darkness had descended upon the world, and the Maggie had entered the fog; following her custom she proceeded in absolute silence, although as a partial offset to the extreme liability to collision with other coastwise craft, due to the non-whistling rule aboard the Maggie, Mr. Gibney had laid a course half a mile inside the usual steamer lanes, albeit due to his overwhelming desire for peace he had neglected to inform his owner of this; the honest fellow proceeded upon the hypothesis that what people do not know is not apt to trouble them.

Mr. McGuffey was already seated and disposing of his meal when Mr. Gibney entered. "Gib," he declared with his mouth full, "rinse the taste o' chewin' tobacco out o' your mouth before startin' to eat, an' then tell me, as man to man, if them eggs is fit for human consumption."

Mr. Gibney conformed with the engineer's request. "Eatable but venerable," was his verdict. "That infernal Scraggs is tryin' to make the Maggie pay dividends at the expense of our stomachs."

"And at the risk of our lives, Gib. I move we declare a strike until Scraggs digs up the money to overhaul the boiler. Just before we shipped into the fog I saw two steam schooners headed south—so they must 'a' seen us headed north. Jes' listen at them a-bellerin' off there to port. They're a-watchin' and a-listenin', expectin' to cut us down at every turn o' the screw. First thing you know, Gib, you'll be losin' your ticket for failin' to be courteous on the high seas."

"Six o' one an' half a dozen o' the other, Bart. If I whistle I'll use up all your steam, an' then if we should find ourselves in the danger zone we won't be able to get out of our own way."

"Let's refuse to take her out again until Scraggy spends some money on her. 'Tain't Christian the way he acts."

"Got to get in another pay day before I start the high an' mighty, Bart. But I'll speak to the old man about them eggs. They taste like they'd been laid by a pelican before the Civil War. Somehow I can't eat an egg that's the least bit rotten."

"It's gettin' so," McGuffey mourned, "that I don't have no more time off in port. When I ain't standin' by I'm repairin', an' when I ain't doin' either I'm dreamin' about the danged old coffee mill. For a canceled postage stamp I'd jump the ship."

He gulped down his coffee, loaded his pipe, and went below to relieve Scraggs, for although experience in acting as McGuffey's relief had given Captain Scraggs what might be termed a working knowledge of the Maggie's engine, McGuffey was never happy with Scraggs in charge, even for five minutes. The habit of years caused him to cast a quick glance at the steam gauge, and he noted it had dropped five pounds.

"Savin' on the coal again," he roared. "Git out o' my engine room, you doggoned skinflint." He seized a slice bar, threw open the furnace door, raked the fire, and commenced shoveling in coal at a rate that almost brought the tears of anguish to his owner's eyes. "There! The main bearin's screamin' again," he wailed. "Oil cup's empty. Ain't I drilled it into your head enough, Scraggs, that she'll cry her eyes out if you don't let

(Continued on page 68)

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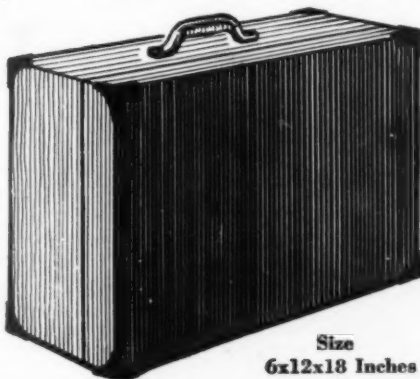
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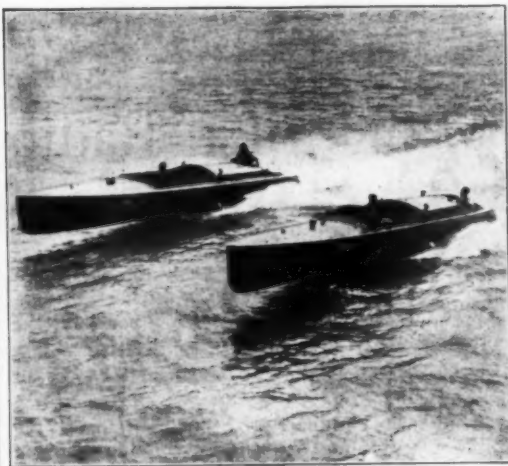
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The Duplicity of Captain Scraggs

(Continued from page 66)

her swim in oil?" He grasped the oil can and, in order to test the efficacy of its squirt, shot a generous stream down Captain Scraggs' collar.

"That for them rotten eggs, you miser," he growled. "Heraus mit 'em!"

Captain Scraggs fled, cursing, and sought solace in the pilot house.

"It's as black," quoted Mr. Gibney as he entered, "as the Earl of Hell's riding boots."

"And as thick," snarled Scraggs, "as McGuffey's head. Lordy me, Gib, but it's thick. You'd think every bloomin' steam pipe in the universe had busted."

"If they was all like the Maggie's," Mr. Gibney retorted drily, "we wouldn't need to worry none. Not wishin' to change the conversation, Scraggsy, but referrin' to them eggs you slipped me and Bart for supper, all I gotta say is that the next time you go to marketin' in ancient Egypt, me an' Mac's goin' to tell the real story o' the S.S. Maggie to the Inspectors. Now, that goes. Scatter along aft, Scraggs, and let me know what that taffrail log has to say about it."

Captain Scraggs read the log and reported the mileage to Mr. Gibney, who figured with the stub of a pencil on the pilot house wall, wagged his head, and appeared satisfied. "Better go for'd," he ordered, "an' help The Squarehead on the look-out. At eight o'clock we ought to be right under the lee o' Point San Pedro; when I whistle we ought to catch the echo thrown back by the cliff. Listen for it."

Promptly at eight o'clock, Mr. McGuffey was horrified to see his steam gauge drop half a pound as the Maggie's siren sounded. Mr. Gibney stuck his ingenious head out of the pilot house and listened, but no answering echo reached his ears. "Hear anything?" he bawled.

"Heard the Maggie's siren," Captain Scraggs retorted venomously.

Mr. Gibney leaped out on deck, selected a small head of cabbage from a broken crate and hurled it forward. Then he sprang back into the pilot house and straightened the Maggie on her course again. He leaned over the binnacle, with the cuff of his watch coat wiping away the moisture on the glass, and studied the instrument carefully. "I don't trust the danged thing," he muttered. "Guess I'll haul her off a coupler points an' try the whistle again."

He did. Still no echo. He was inclined to believe that Captain Scraggs had not read the taffrail log correctly, and when at eighty-thirty he tried the whistle again he was still without results in the way of an echo from the cliff, albeit the engine room howler brought him several of a profuse character from the perspiring McGuffey.

"We've passed Pedro," Mr. Gibney decided. He ground his cud and muttered ugly things to himself, for his dead reckoning had gone astray and he was worried. The fog, if anything, was thicker than ever. He could not even make out the phosphorescent water that curled out from the Maggie's forefoot.

Time passed. Suddenly Mr. Gibney thrilled electrically to a shrill yip from Captain Scraggs.

"What's that?" Mr. Gibney bawled.

"I dunno. Sounds like the surf, Gib."

"Ain't you been on this run long enough to know that the surf don't sound like nothin' else in life but breakers," Gibney retorted wrathfully.

"I ain't certain, Gib."

Instantly Gibney signaled McGuffey for half speed ahead.

"Breakers on the starboard bow," yelled Captain Scraggs.

"Port bow," The Squarehead corrected him.

"Oh, my great patience!" Mr. Gibney groaned. "They're on both bows an' we're headed straight for the beach. Here's where we all go to hell together," and he yanked wildly at the signal wire that led to the engine room, with the intention of giving McGuffey four bells—the signal aboard the Maggie for full speed astern. At the second jerk the wire broke, but not until two bells had sounded in the engine room—the signal for full speed ahead. The efficient McGuffey promptly kicked her wide open, and the Fates decreed that, having done so, Mr. McGuffey should forthwith climb the ladder and thrust his head out on deck for a breath of fresh air. Instantly a chorus of shrieks up on the fo'castle head attracted his attention to such a degree that he failed to hear the engine room howler as Mr. Gibney blew frantically into it.

Presently, out of the hubbub forward, Mr. McGuffey heard Captain Scraggs wail frantically: "Stop her! For the love of heaven, stop her!" Instantly the engineer dropped back into the engine room and set the Maggie full speed astern; then he grasped the howler and held it to his ear.

"Stop her!" he heard Gibney shriek. "Why in blazes don't you stop her?"

(Continued on page 88)

On the After Deck This Summer



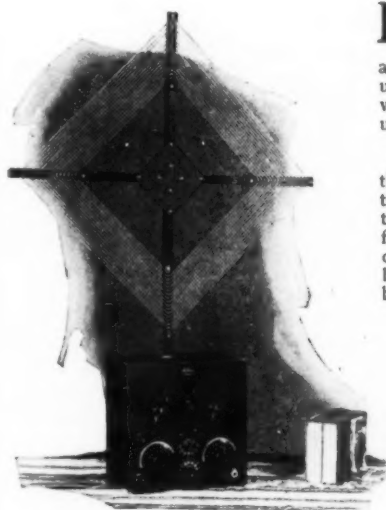
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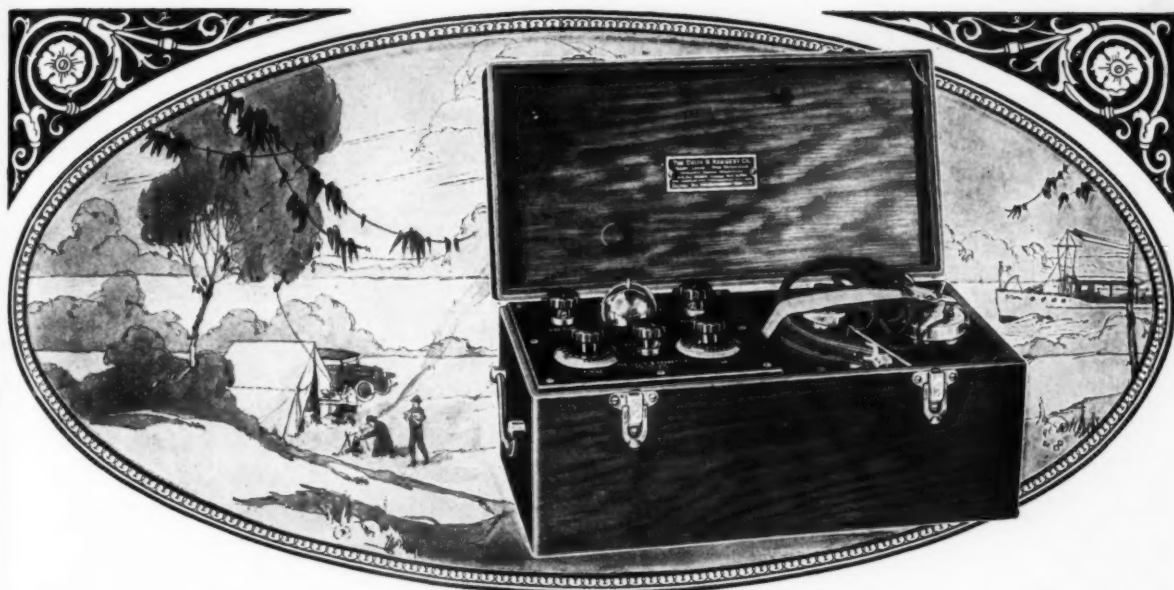
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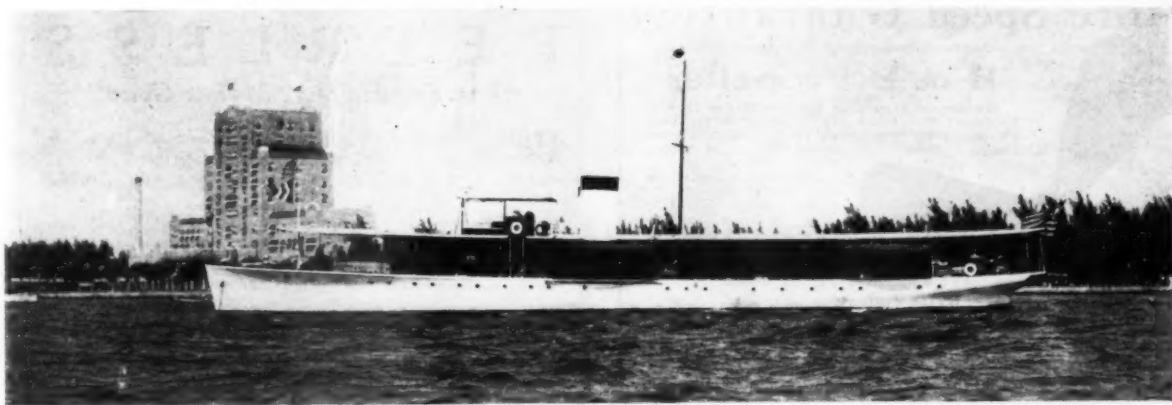
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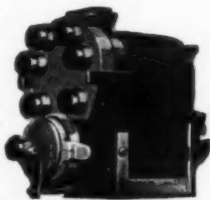
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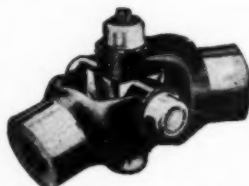
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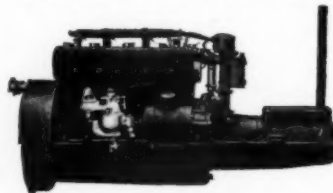
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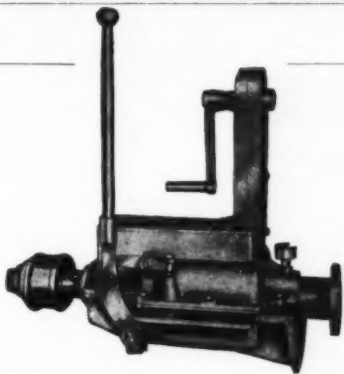
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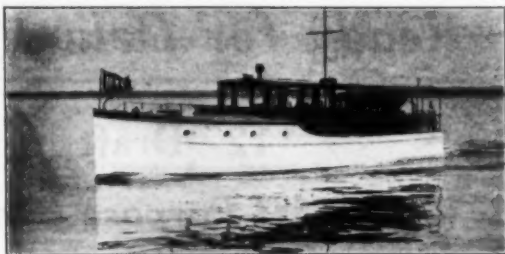
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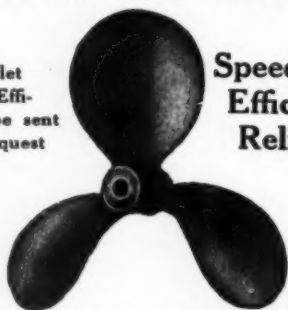
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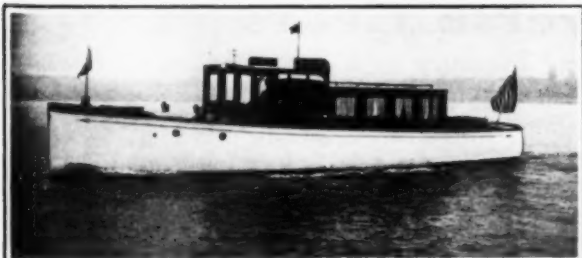
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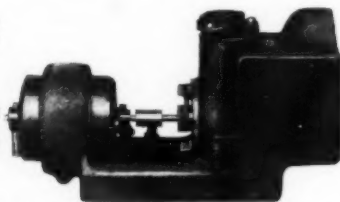
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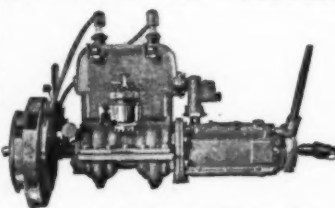
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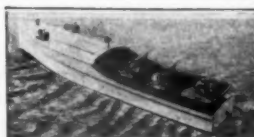
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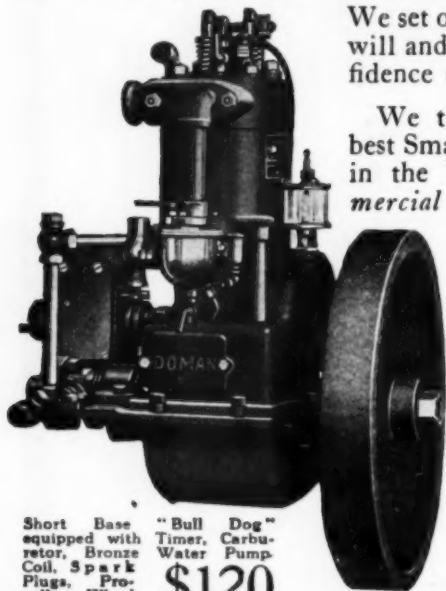
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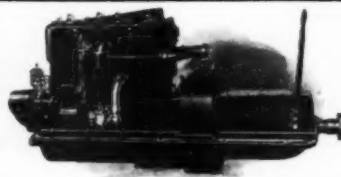
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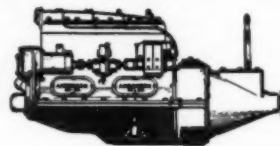
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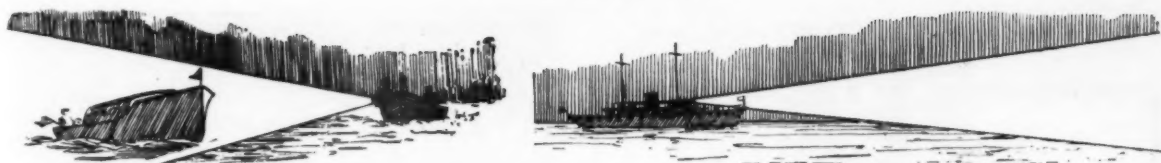
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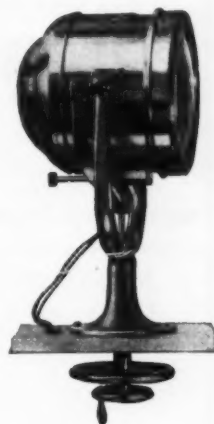


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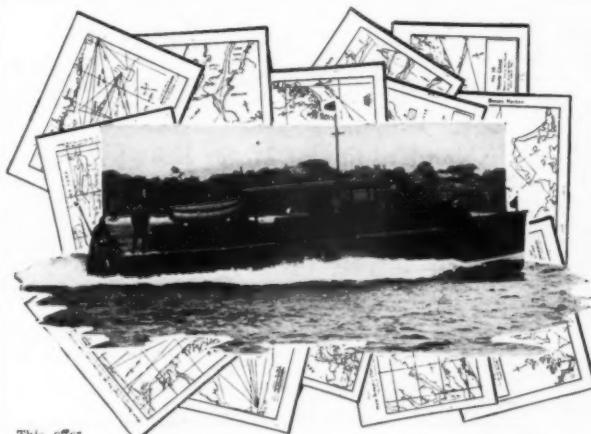
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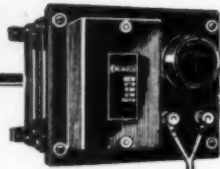
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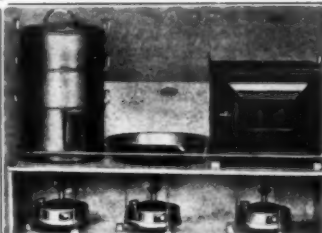
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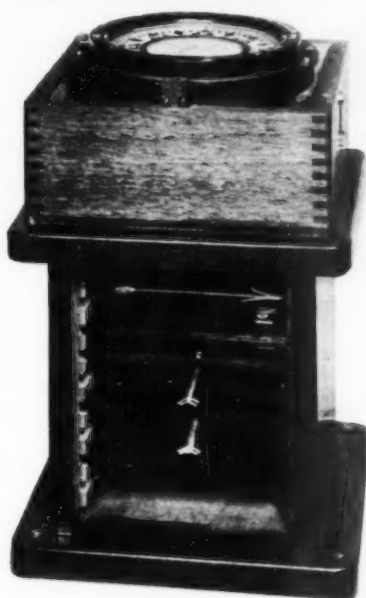
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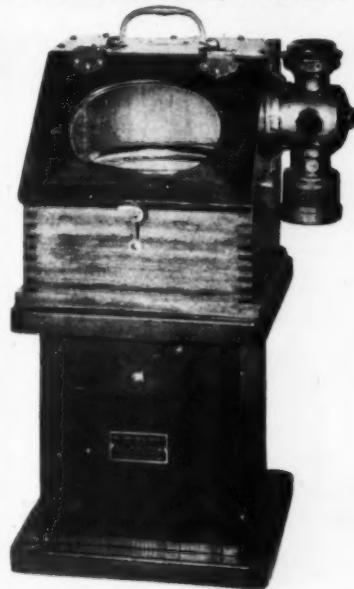
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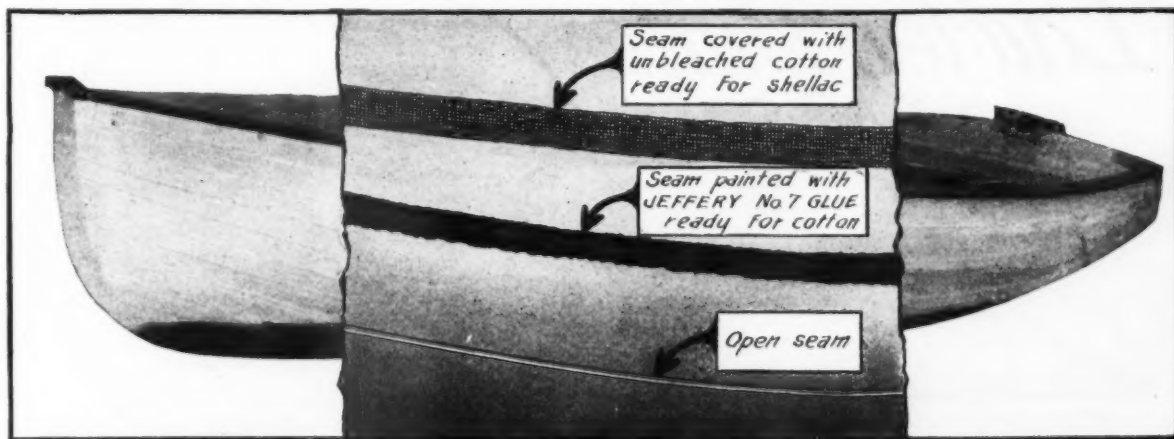
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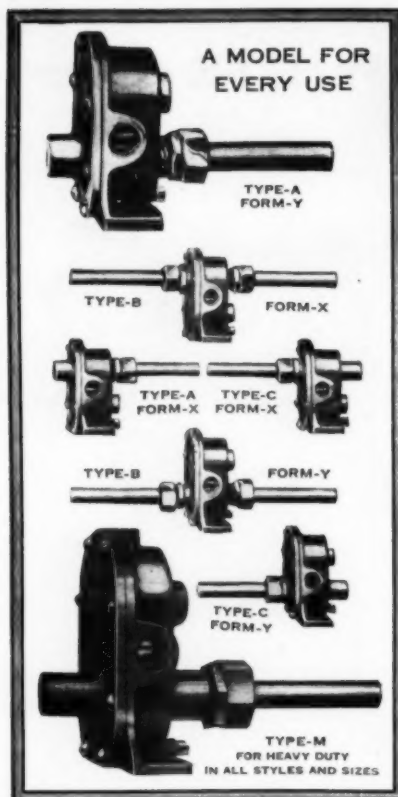
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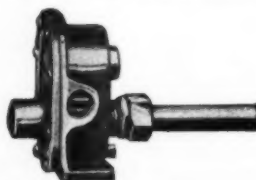
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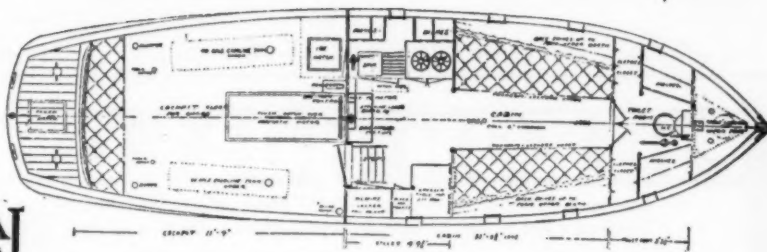


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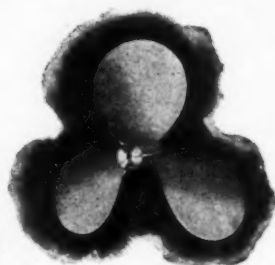
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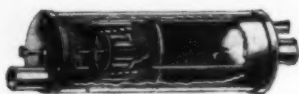


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Established 1853

The Duplicity of Captain Scraggs

(Continued from page 68)

"She's set astern, Gib. She'll ease up in a minute."

"You know it," Gibney answered significantly.

The Maggie climbed lazily to the crest of a long oily roller, slid recklessly down the other side, and took the following sea over her taffrail. She still had some head on, but very little—not quite sufficient to give her decent steerage way, as Mr. Gibney discovered when, having at length communicated his desires to McGuffey, he spun the wheel frantically in a belated effort to swing the Maggie's dirty nose out to sea.

"Nothin' doin'," he snarled. "She'll have to come to a complete stop before she begins to walk backward and get steerage way on again. She'll bump as sure as death an' taxes."

She did—with a crack that shook the rigging and caused it to rattle like buckshot in a pan. A terrible cry—such a cry, indeed, as might burst from the lips of a mother seeing her only child run down by the Limited—burst from poor Captain Scraggs. "My ship! my ship!" he howled. "My darling little Maggie! They've killed you, they've killed you! The dirty lubbers!"

The succeeding wave lifted the Maggie off the beach, carried her in some fifty feet further, and deposited her gently on the sand. She heeled over to port a little and rested there as if she was very, very weary, nor could all the thrashing of her screw in reverse haul her off again. The surf, dashing in under her fantail, had more power than McGuffey's engines, and, foot by foot, the Maggie proceeded to dig herself in. Mr. Gibney listened for five minutes to the uproar that rose from the bowels of the little steamer before he whistled up Mr. McGuffey.

"Kill her, kill her," he ordered. "Your wheel will bite into the sand first thing you know, and tear the stern off her. You're shakin' the old girl to pieces."

Is Your Cruiser Radio Equipped?

(Continued from page 29)

half volts. One of these is usually sufficient unless amplifiers are employed, under which circumstances two additional batteries are required.

In choosing the vacuum tube receiver, one must decide whether one wishes to sacrifice a certain amount of sensitivity to distant stations and a certain amount of the ability to readily select one station from the other in favor of extreme simplicity of operation, or whether one wishes to forego the extreme simplicity and spend two or three evenings in the study of the operation of a slightly more complicated type in order to secure the greater distances available and the greater freedom from disturbing elements. Of course, the greatest satisfaction is to be derived from the latter type and inasmuch as the prices of the two types are about equal, the choice will depend upon the considerations above mentioned. The two types are known respectively as single circuit, and three circuit receivers.

In locating the radio equipment on board the boat, the batteries may be put in any out of the way place. If the ignition battery is used for lighting the filament of the tube, No. 14 rubber covered wire will need to be run to the battery. A smaller wire than this will not properly suffice. The output circuit, or, as they are more generally known, the plate circuit batteries, may also be located at any convenient point, although it is generally advisable to place them as near to the receiving equipment as practicable. The receiving equipment itself should be located either in the forward part of the boat or the after part of the boat, in order that the lead-in wire as it comes from the antenna may run as directly as possible to the receiving equipment. Frequently it is desirable to bring in the antenna wire through a lead-in insulator. If this insulator is placed in the roof of the cabin, considerable care will need to be taken to insure a waterproof joint where the insulator passes through. It may just as well be placed in the side of the cabin, provided the wire from the antenna can be brought through it without interfering with passage upon the decks. It is desirable to provide some sort of lightning arrester. Lightning very seldom strikes a vessel at sea, and insofar as the writer knows, has never been known to strike a small boat, but the fire underwriters' rulings call for the installation of the lightning arrester and it had best be done in order that such insurance as is carried upon the boat may not be invalidated. If amplifiers are installed, it may also be desirable to run a circuit to the forward and after part of the boat, at which point, a plug-in connection is available, so that the horn may be set upon the desk. A long flexible cord would serve this purpose satisfactorily in the smaller type of craft. In either case, the tuning in of the desired station is first accomplished after which the loud speaker is connected. If adjustments have been carefully made, the entire concert of any particular broadcasting station, stretching through a full evening, may be enjoyed without the necessity for winding anything.

The Correct Spark Plug Equipment for Outboard Motors

Here is the Plug — and Here are the Sizes



Caille: 7/8-18 Johnson: Metric
Elto: Special Metric Koban: 7/8-18
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Be Sure to Specify Waterproof Type

RAJAH SPARK PLUGS

THE Rajah Waterproof is the first and only thoroughly successful waterproof plug ever designed. This patented design cannot be equalled because the exclusive Rajah features cannot be imitated.

The porcelain is protected by a sturdy cap of molded Condensite. Above this is a flexible rubber nipple that covers the terminal and extends over the insulation on the cable. You can drench this plug without a drop of water or even of dampness reaching the electrical connections. And still the terminal is instantly detached.

Think what that means to the owners of an outboard motor, or any exposed marine engine in an open boat. Wet weather has no terrors. Rain, spray or solid water will not affect the regularity of your ignition.

Standard Rajah Plugs have always led in popularity for marine use, and owners of exposed motors who try the Rajah Waterproof will use no other.

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Price \$1.25
All Threads

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Complete with Terminal

Waterproof Rajah Plug \$1.25

If your dealer doesn't sell genuine Rajah Spark Plugs, order direct from us stating thread wanted and mentioning make of motor. To get the best motor efficiency, use a real Rajah Plug in each cylinder.



Equip your spark plug cables with the famous Rajah Terminals. Fit all plugs, made for all size wires.

Rajah Solderless Terminals can be installed on your wires in a few seconds, without solder or tools. Send 15c for sample.



Dept "A," RAJAH AUTO SUPPLY CO., Bloomfield, N. J., U. S. A.

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REVERSE GEAR

BEFORE your overhauling is completed, before your boat is put in the water, consider installing a Standard Gear. Write or wire us for prices and details, stating power and revolutions of your engine and the size and type of your boat.

These 1923 Standard Reverse Gears are the result of eleven years of gear manufacturing experience and improvement. Their success from a mechanical standpoint is proved by the fact that there are more than 30,000 Standards in use. They are the only reverse gears equipped with our wonderful Multi-Cone Clutch.



The Standard Midget. The smallest reverse gear made. Holds 5 H.P. at 1,000 R.P.M.



"It wears in—not out."

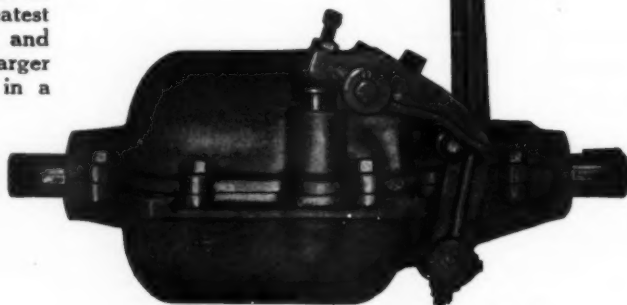
THE smooth engagement and tremendous holding power of the Multi-Cone Clutch is due to its great friction surface. See the four large cones in the illustration and note that all the friction surface is at the point of greatest diameter which increases the leverage and holding strength. These cones are much larger and sturdier than the thin plates used in a multiple disc clutch.

Model "C" Standard Multi-Cone for 100 H.P. Hall-Scott. Entirely enclosed, \$100.00 Complete.

THERE is no gear to equal the Standard, because there is no clutch to equal the Multi-Cone.

REMEMBER this:—The Multi-Cone Clutch is built to outlast your motor, without regards to the service.

THE Standard Multi-Cone Clutch is the most efficient marine clutch ever designed. No other gear can equal the Standard in smoothness of operation and freedom from trouble because no other has the right to use this patented design.



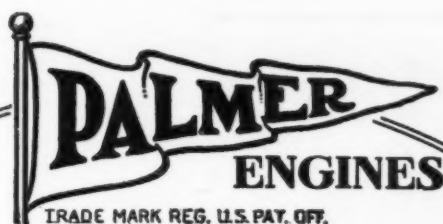
An oil groove with packing makes this case oil-tight at every joint. Oil traps at the end of each bearing prevent leakage. A ball thrust bearing at the rear is an integral part of the Standard Gear.

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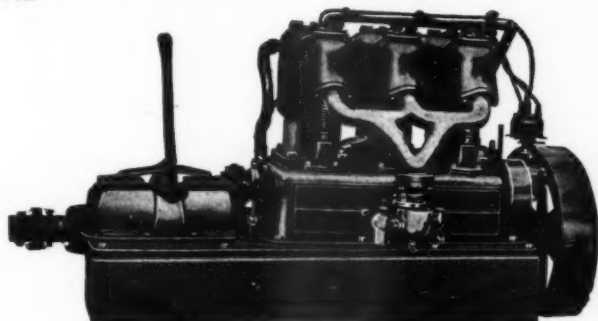
Power Your Boat with a Palmer Engine



Model VH, 14-16 H.P.

A high speed four cycle engine with enclosed overhead valves and overhead camshaft. Equipped with starter, generator, battery, high tension magneto, jump spark ignition. Four cylinders, cast en bloc.

There isn't a handsomer, smoother running or more up-to-date engine on the market than the Palmer Model VH.

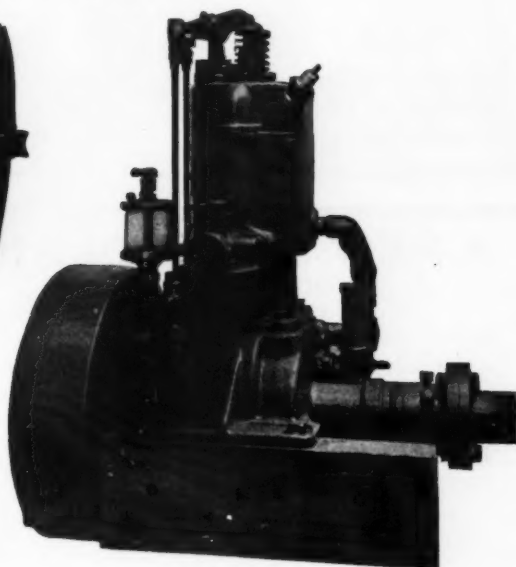


The famous Palmer NR the most popular medium duty marine motors on the market. Bore 5 inches. Stroke 6 inches.

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Palmer Engines are built for every type of boat, 2 H.P. to 80 H.P. High speed, medium duty and heavy duty.



Model YT, 2 H.P.

A four cycle valve-in-head motor designed especially for yacht tenders and other small boats. Weight 95 lbs.

You'll never find a better built, more carefully designed or more reasonably priced motor than the Palmer, no matter which size and type of Palmer engine you consider.

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The Motor shown is Model "M" 17-20 H.P.
medium duty.

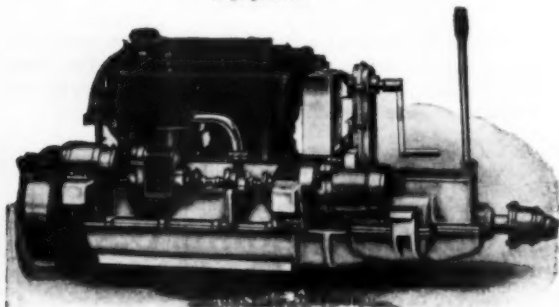
M-4 { 17-20 H.P.
25-30 H.P.

B-4 { 25-35 H.P.
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50-75 H.P.

A new six cylinder 4 x 5 1/2, 60 H.P., 1200 R.P.M

All Models Furnished with Complete
Equipment.



One Solution to the Export Problem

(Continued from page 41)

Now if the South American cannot afford to wait months for service, and if the North American cannot afford to give him service on the spot, it is evident that only by compromise can the two get together. The Panama Canal, geographically the center of the western hemisphere, and destined to become its great crossroad of commerce, is the spot where the enterprise should be effected.

But as it is no more possible for each individual manufacturer to establish a service station in Panama than in some one city of South America, it is evident that an amalgamation of interests must be brought about. Such a merger could well be encouraged by the National Manufacturers' Association and the National Association of Engine and Boat Manufacturers.

Let all the members of either association who are desirous of developing their South American trade club together in the construction and maintenance of a warehouse in Colon or Panama City. Let them store there a complete line of their products with a full stock of replacements, and let there be American employees of high caliber who will ably represent the various manufacturers. In short, as was said above, let there be established in Panama a machinery exchange for taking care of South American commerce.

With such a depot in being, the Latin user of marine goods would save from three to four weeks whenever he needed original or replacement equipment. He would have the added advantage of dealing with men selected because they knew his language and had a close acquaintance with transportation facilities in the southern continent.

The American manufacturer would benefit through placing on capable shoulders the burden of his growing export business. Giving better service to the consumer, he would widen his market. But, widespread though the demand for his products might be, he would have to ship only through one well-grooved channel. The depot at Panama would handle final distributions.

Mr. Snow, who promulgated this idea to me, will be the first to admit that it has difficulties. The payment of an import duty to the Republic of Panama must be avoided if the citizens of other South American states are to benefit by the arrangement. The cooperation of American manufacturers must be secured before a start is made. And, apart from such considerations, the United States Government should be induced to take an important step. This step concerns the construction of a highway across the Isthmus of Panama so that freight may move easily and cheaply.

With respect to highways in the Canal Zone a curious situation exists. As everybody knows, the United States controls the water rights in the Canal. As every visitor to the Zone knows, the Panama Railroad Company controls the railway rights. And, as every resident in the Zone knows, there are no through highway rights.

Sometimes, when the Panama Railroad Company is transacting its normal carrying business, it is a private corporation, possessing the privileges of private corporations.

Sometimes, when any criticism or lawsuit is directed against the railroad company, it is not a private corporation, but the United States Government. And sometimes, as when the suggestion is made that a motor highway be built across the Isthmus it is a private corporation jealous of its monopoly and also the United States Government maintaining its monopoly.

Diverging from this topic, it is becoming increasingly apparent that to achieve success a marine motor, a tractor, or an electric light plant must be sold to South America as a complete outfit. If it is a marine motor the reverse gear must go with it; if it is a lighting station it must include switchboard, storage batteries, and so on. No article should be advertised or sold stripped of any of its essentials. The purchaser must be saved the annoyance and the expense of waiting another three months until some needed accessory arrives to put his original purchase in complete working order.

For another thing, the sale of gasoline equipment among our Latin neighbors is likely to be extremely limited. Gasoline costs from fifty cents to a dollar a gallon. The recreational tastes of the inhabitants in most of the countries do not run to motor boats. Their business needs must be met with cheaper fuel. That fuel is crude oil, and where there is a demand for internal combustion engines it is focused in a demand for Diesel and semi-Diesel engines. It is still further restricted by a need for engines in small capacities. And, finally, the market concentrates to a demand for small Diesels or semi-Diesels of tried and proven quality.

But if the manufacturer of small Diesels or of other equipment that finds an outlet in the South American field cannot keep a service and demonstration man at every point of distribution he has a compromise measure available to him and to his fellow manufacturers. He may go half way to his market with some assurance that his market will come half way to him. He may establish a distribution station in Panama.

Perfect Build

Supreme in Simplicity

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We want to broaden the field of enjoyment coming from these high grade motors and therefore we have set a new low level in outboard motor prices—the marvel of the outboard motor field. Therefore, *why pay more?*

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| Sturdy Single | Superb Twin |
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Detachable
Outboard Motors

opening up new worlds of comfort, new joys of dependability, new accomplishments in outboard motor simplicity—for you!

What thousands of gay, carefree hours of sport, recreation, and exhilarating fun these extraordinary Spinaway features promise! What glorious dawns on the water—noons, sunsets, evenings—you can anticipate with these "Pals of Play"—either the Superb Twin or the Sturdy Single. For Spinaway thrives lustily—and purrs contentedly in the very joy of it—in peaceful pools, choppy currents, surging streams, breezing along happy as a bluebird, untiring as an airedale.

The gem of the water, truly—proud, spirited, faithful, unconquerable, yet with a simplicity found only in true leaders. Honestly, you'll never know what *real* outboard motoring is, until you push off and Spin Away with a Spinaway.

Meet these "Pals of Play"—we'll be glad to introduce you. Go to the Spinaway dealer in your town—allow him to put either a Sturdy Single or a Superb Twin through its paces.

If you don't know your Spinaway dealer, write us and we'll tell you his name—and send you a handsome catalog. No obligation at all.

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1923 Gray Motors Await You

Your boat and your pleasure is deserving of a better motor, one on which you can place the utmost dependence.

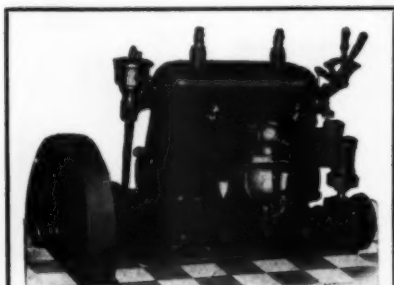
You not only get dependable service, but you get in a Gray, a smooth, quiet, clean, operating motor that tends to give you that pleasant feeling of relaxation, you seek.

In small cruisers up to 35 feet—Runabouts 20 to 30 feet and work boats the Gray 4 cylinder valve-in-head has given their owners better Economy and more speed than any other type of the same bore and stroke.

We don't ask you to rely entirely upon our statement but will gladly put you in touch with these owners.

What Engine of equal cylinder displacement do you know of that will turn a 14" dia. x 20" Pitch Hyde type Wheel constantly 1650 revolutions, or a 20" dia. Hyde Wheel, 900 revolutions.

Note the rigid one-piece base with Reverse Gear enclosed. The gear is automatically lubricated with positive gear pump that lubricates all other internal working parts of the engine—no grease cups or thick transmission oil used.



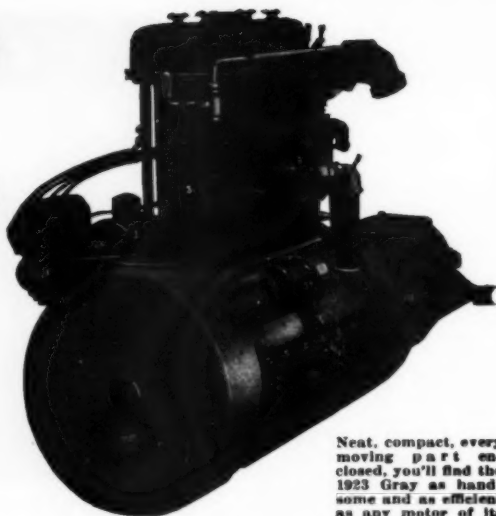
One of our most popular selling engines is the 2 cylinder 6 to 8 H. P. A most powerful and durable one, occupying less space for the power developed than any other, that we know of.

Its easy starting, and dependable operation coupled with its wonderful economy, recommends it to those who are considering a motor for a pleasure boat 16 ft. to 24 ft. or for a fish or work boat up to 20 ft. requiring 6 to 8 H. P. For auxiliary power in sailing boats up to 35 ft. this little engine is a great favorite.

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**Gray Motor
Corporation**

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Neat, compact, every moving part enclosed, you'll find the 1923 Gray as handsome and as efficient as any motor of its size ever built, regardless of price.

Oil filler is conveniently located on top of the engine with duct leading to Crank Case. Rocker arm shaft is hollow and automatically supplies oil to Rocker Arms. Oil is forced under pressure to the three main bearings, and to the connecting rod troughs.

In brief, the Gray Oiling System leaves nothing to chance. It is unfailing at all engine speeds, and all oil is kept inside the engine, and not thrown around the boat or on its occupants.

Due to the special design of the Cam Shaft, push rods and rocker arms, scarcely a sound can be heard with the ear close to the engine.

The smooth, quiet operation of the new Gray Improved Valve-in-Head at all speeds from 200 to 2000 would compare favorably to an electric motor. It runs most economically on low grade gasoline and satisfactorily on kerosene.

Note The Big Crankshaft

The diameter of the main bearings are: Front 2 1/4". Center 2 1/16". Rear 2". The lengths are 3 3/4", 2 1/4", 2 1/4" respectively. Crankshaft is 40-50 point carbon steel forging, heat treated and ground.

Special attention is given to the balancing. The shaft is put in rotative as well as static balance on an Akinoff Dynamic Balance Machine, reducing vibration to a minimum.

Bosch Magneto with Impulse Starter, or Bosch two unit Starter and Generator is used.

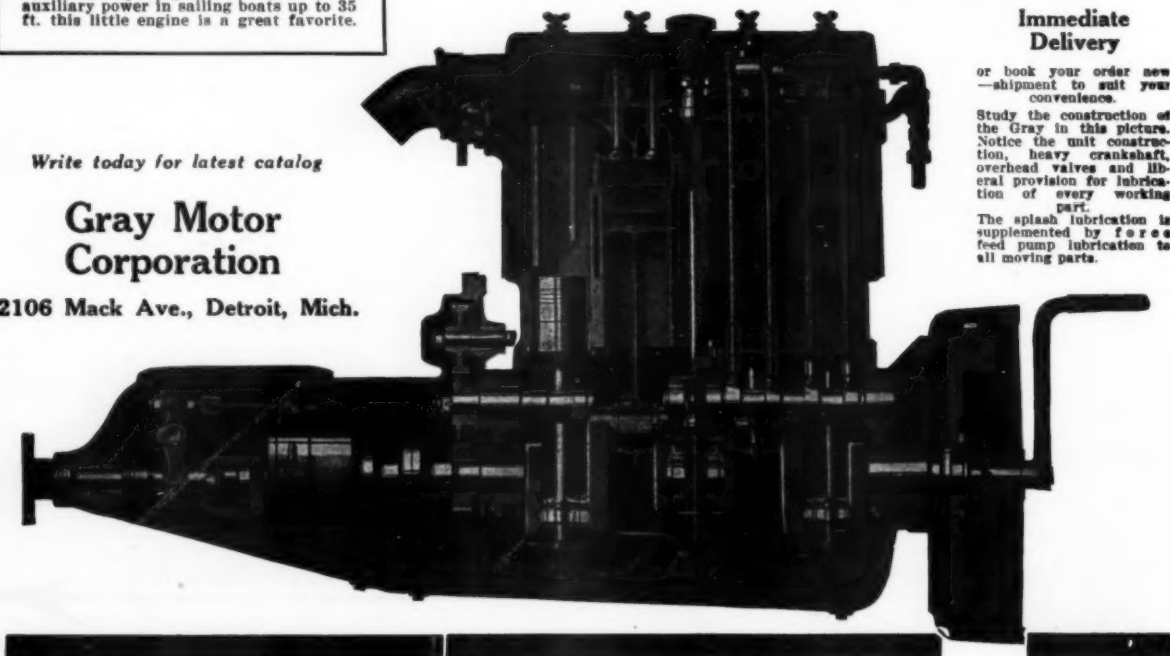
Gray Two-Cycle Motors are built in models from 3 to 8 h.p.

Immediate Delivery

or book your order now—shipment to suit your convenience.

Study the construction of the Gray in this picture. Notice the unit construction, heavy crankshaft, overhead valves and liberal provision for lubrication of every working part.

The splash lubrication is supplemented by force feed pump lubrication to all moving parts.



Hacker-Craft

The Dolphin Boat



23' Long 6' Beam

The New Hacker Creation and A New Standard Of Value

All mahogany natural finish boat. Seats 8 people. Double Cockpit.

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Navigation Now Possible Without Complex Mathematics

(Continued from page 21)

since I am measuring on a great circle, each minute of arc difference will equal a nautical mile. Thus, he calculated what the altitude should be from the dead reckoning position, or from a near-by assumed position, and found the difference between the calculated and observed altitudes. Then from an azimuth table, he took out the true bearing of the sun, and drew a line on the chart through the assumed position and in the direction toward the sun. Commencing at the assumed position, he then stepped off on this line of bearing, and either toward or away from the sun as the occasion required, the difference between the calculated and observed altitudes; and through the point so found drew the Sumner line at right angles with the line of bearing. With one calculation and an azimuth, he obtained Sumner's result, as indeed Sumner had suggested, but in a simpler manner.

Now comes the table of Mr. Littlehales, which seems to combine elements from the old time sight, Sumner and Saint Hilaire, and to combine them most ingeniously. The writer regrets that no copy of the new table is before him, and that he must describe it from second-hand information.

First, Mr. Littlehales' table gives the hour angle, or angle at the pole, as in the old time sight, and, in a parallel column on the same page, the corresponding azimuth. The table is arranged in convenient even degree intervals. Thus it is entered with the nearest degree of latitude, altitude and declination, and the hour angle for these elements is read at a glance. But, one may say, the true elements may not agree with any one of those assumed in entering the table, and a triple interpolation will be required. Not so. But one interpolation is required for the tabulated data; that for the declination. And this is easy, for an auxiliary table is given, showing the allowance to be made for one minute of declination. The entire correction may be made in a moment by taking this factor and multiplying it by the difference between the true declination and the one assumed on entering the table. The correction so found is applied to the tabular hour angle, and we have the approximate local apparent time. This is applied to the Greenwich apparent time in the usual way, giving an approximate longitude.

So far, we have merely read a tabulated result from a single page and made an easy interpolation. But now comes the fine point of the method. The longitude thus found is only approximate, for we entered the table not with the exact latitude and altitude, but with assumed ones to the nearest degree. Allowance must be made for these differences, and is done as follows: The approximate longitude and assumed latitude are located upon the chart, and a line drawn through that position in the direction toward the sun, and then the difference between the observed and assumed altitudes is stepped off along this line, toward or away from the sun, precisely as in Saint Hilaire. Then is drawn the line of position at right angles with the line of bearing. This takes care of the difference between the true and assumed altitudes. But at the same time it takes care of the difference between the true and assumed latitudes; for the true latitude will be somewhere along the line of position, as we saw above in discussing Sumner's method.

Without having the new tables at hand, it would be inexpedient to attempt a more explicit explanation. They appear, however, to be in advance of anything heretofore offered. In computing the old time sight, it was necessary to enter the log table five times to select four or five different trig functions. Sumner's method of double computation used a like number of functions, and we entered the table ten times to get them. The Saint Hilaire method commonly employs four functions, requiring seven entries into the log tables. Mr. Littlehales' method requires the reading of four quantities from the same page. The result is then found by a couple of interpolations by simple arithmetic and a chart plotting no more difficult than in the other methods. It is said that the work can be done in from two to four minutes.

Compared with computation methods, the new table saves

time and obviates any difficult mathematics. Compared with former tabular methods, the time saving may not be so marked, but it would appear that there is a real gain in simplicity and ease of application.

The amateur must not conclude that a few hours' practice with Mr. Littlehales' table will make him a finished navigator. As in other methods, he must understand such matters as astronomical time, the use of the nautical almanac, the use of the sextant, and the correction of observed altitudes. He should fully understand the longitude problem. But the table saves him any need of solving the astronomical triangle by logarithms and trigonometry.

An example appearing at page 142 of the 1920 edition of Bowditch, and there worked by the old time sight method, is herewith reworked by Saint Hilaire and Littlehales, and presented for comparison. The figures from Mr. Littlehales' table are furnished by A. W. Payne. It is deemed unnecessary to present the computation of the data, which are taken from the Bowditch problem:

D. R. Lat. $41^{\circ} 33' N$; Long. $33^{\circ} 37' W$
True altitude $29^{\circ} 50' 04''$
Declination $19^{\circ} 31' 18'' N$
Greenwich apparent time $21h 46m 35s$
Greenwich hour angle $2h 13m 25s$

By Littlehales

Entering table with altitude 30° , latitude 41° and declination 20° of same name as latitude, we have:

| | | | |
|-------------------------------------|-------------------------|---|----------------|
| Tabulated hour angle | 4h 28m 31s | Corr. for $28' 42''$ diff. between true dec. and 20° : | |
| Correction for $28' 42''$ | — 1m 32s | | |
| Local hour angle | 4h 26m 59s E | Corr. for $1'$, Mult. by | 3s.2 28.7 |
| Greenwich hour angle | 2h 13m 25s E | | 574 861 |
| | | | 91.84 = 1m 32s |
| Longitude | 2h 13m 34s W | | |
| Or | $33^{\circ} 23' 30'' W$ | | |
| Tabulated azimuth | N $88^{\circ} .8 E$ | Corr. for $1'$, Mult. by | .024° 28.7 |
| Correction for $28' 42''$ | .7 | | 1148 574 |
| Azimuth | N $89^{\circ} .5 E$ | | |
| Assumed altitude on entering table, | 30° | | .6888° |
| True alt. | $29^{\circ} 51' .1$ | | |
| Diff. | | | 9' .9 Go away |

Working by Saint Hilaire from an assumed position equalling the approximate position found from the table (chosen for convenience of comparison), we have.

By Saint Hilaire

| | | | |
|---|-----------------------|------------------|---------|
| G. A. T. | 21h 46m 35s | | |
| Long W ($33^{\circ} 23' .5$) | — 2h 13m 34s | | |
| t | 19h 33m 01s | log hav | 9.48086 |
| Lat | 41° | log cos | 9.87778 |
| dec | $19^{\circ} 31' 18''$ | log cos | 9.97429 |
| | | log hav θ | 9.33293 |
| | | nat hav θ | 0.21524 |
| L ~ d | $21^{\circ} 28' 42''$ | nat hav | 0.03471 |
| z | $59^{\circ} 59' 35''$ | nat hav | 0.24995 |
| | 90° | | |
| Calculated alt. | $30^{\circ} 0' 25''$ | | |
| True alt. | $29^{\circ} 50' 4''$ | | |
| Diff. | 9' .4 | Go away | |
| Azimuth from H. O. Pub. No. 71, N $89^{\circ} .5 E$. | | | |

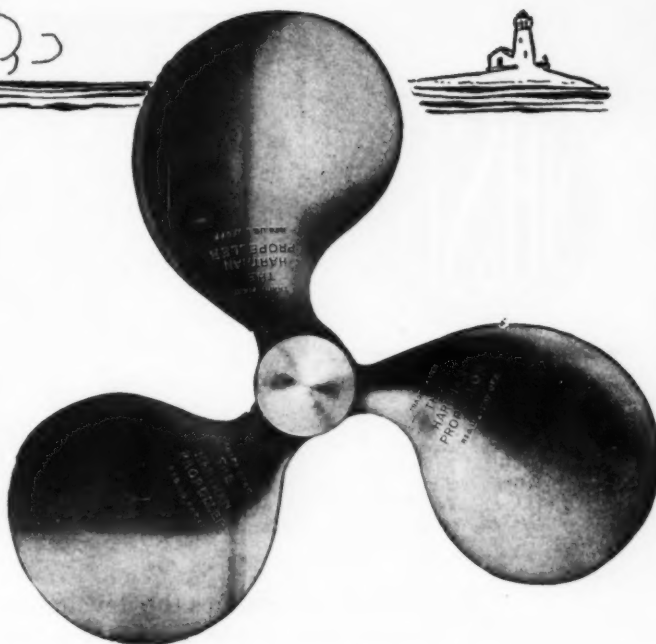
The plotting of both lines of position from the same assumed position is shown in Fig. 3. In this problem the azimuth is nearly east, and thus the line of bearing almost coincides with the parallel.

The positions found by the two methods differs about half a mile, not an important matter. Perhaps this difference could be obviated if the Littlehales tables were at hand.



Don't Blame Your Engine

IF your boat isn't as fast as it ought to be, or if it burns too much gasoline per mile and per hour, don't blame your engine. Perhaps your propeller wheel is bent or out of true, or maybe it isn't just the right size or pitch to give the best results with your hull and power plant.



The selection of a proper propeller is one of the most important details in perfecting the efficiency of your outfit. We will be glad to help you determine the correct size and type for your boat.

HARTHAN TRUE - SCREW PROPELLER

THE Harthan is correctly designed in the first place, and then we take every precaution in its manufacture to make sure you will get all the efficiency and durability that can be built into a wheel by careful workmanship and fine materials. It is carefully balanced, machined and polished so as to run without vibration and to cut through the water with minimum friction.

Boat builders and architects often try several different wheels on a new boat before they find the one that gives the right engine revolutions and maximum boat speed. All their experience and careful computations are secondary in importance to the actual trial. It is just as important for the boat owner to determine that he has the right wheel. Don't assume

it is correct just because it was on the boat when you bought it.

A new wheel will often save its cost several times over during the first season. By reducing fuel consumption or increasing mileage per gallon, you get big dividends from your investment.

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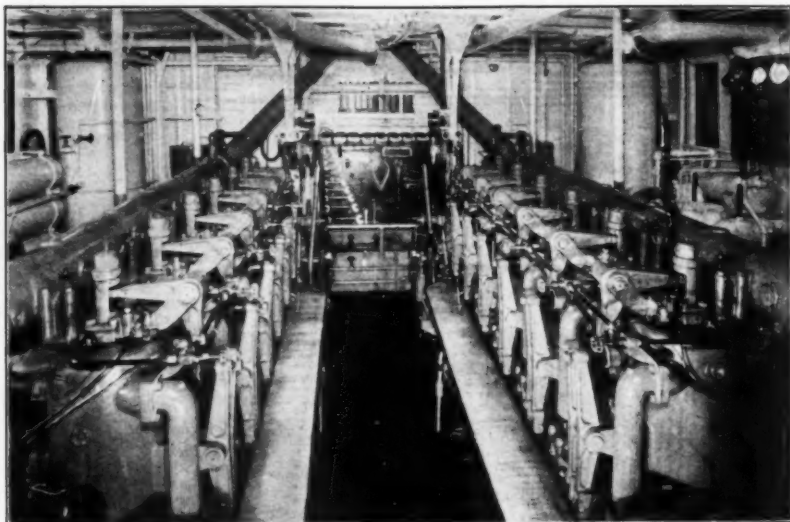
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| Water Line Length..... | Beam Draught |
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| H.P. | R.P.M. Present speed |
| Present wheel | |
| Name | |
| Address | |

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the two six-cylinder 180
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ZALOPHUS signalizes the development of a new type of pleasure craft. Larger and more able than the typical motor houseboat—far roomier and more economical to operate than a conventional yacht of its size—this houseyacht combines the comfort and accommodations of the former type with the seaworthiness and cruising ability of the latter.

NELSECO DIESEL power makes such a boat possible and practicable. It provides the compactness and cleanliness of the internal combustion type with the reliability of a slow speed engine. Its cruising range without refueling is much greater than gasoline and steam. The operating cost is about *one-third* that of a steam engine and *one-tenth* that of a gasoline engine.

*NELSECO MARINE DIESELS are built
in sizes of 120 B. H. P. and upwards.
Latest bulletins and prices on request*

**THE NEW LONDON SHIP
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*The 125 ft. steel house-
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STANDARD 25-FOOT RUNABOUT CARRYING 5 PEOPLE

The surpassing advantages of Sea Sled construction as represented particularly in our latest standard 25' hulls, available with either one or two engines, and in runabout or sedan types, have met with the most striking recognition this season. This is attested by the volume of orders in hand. Unquestionably the business in sight will exceed our production capacity for June delivery.

We urge anyone considering Sea Sleds for Summer delivery to communicate with us without delay.

Are you going to have one of the eight, eleven or thirteen-foot Sea Sled dinghies for this season?

Inverted V-bottom and Surface Propeller boats.

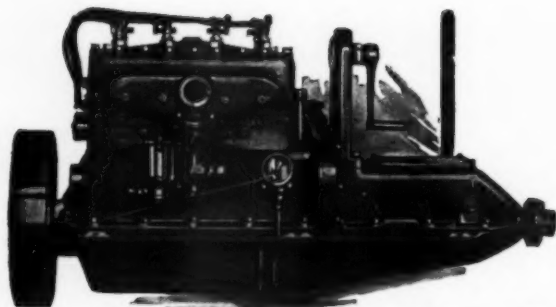
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NIAGARA "Special" 9-15 h.p. Unit Power Plant

The Ideal Power Plant

A REAL four cylinder four cycle unit power plant that gives the easy starting, steady power, flexibility and freedom from vibration that you can find only in this type of engine. Costs no more than most two cycle engines of equivalent power.

Bore $2\frac{5}{8}$ ", stroke 4", Medium duty, 600 to 1100 R. P. M., 12 to 15 H.P. A complete and compact little motor that looks ideal in any boat. Regular equipment includes built-in rear starter, reverse gear, sight-feed lubricating system, carburetor, superheated intake manifold, detachable cylinder head, bronze rotary water pump, covered valve mechanism, with option of coil and timer, magneto or Atwater Kent ignition.

Superior Engines for Larger Types of Boats

THE NIAGARA E-2 is 12-14 h.p., 2-cyl., 4 cycle, for FISHING AND HEAVIER SMALL BOATS.

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The NIAGARA D-4 is 40-60 h.p., 4 cyl., 4 cycle, for COMMERCIAL BOATS, TUGS, ETC.

The NIAGARA D-6 is 60-120 h.p., 6-cyl., 4 cycle, for CABIN CRUISERS, MOTOR YACHTS, PASSENGER AND SERVICE BOATS.

Write today for catalog and prices. State h.p. interested.

Niagara Motors Corporation
206 Niagara Blvd., Valuable Territory Available Dunkirk, N. Y.



Advertising Index will be found on page 138

Yard & Shop

(Continued from page 46)

Radio Sets on Part Payment

A definite plan for selling Amrad Radio Products on partial payments is announced by the American Radio and Research Corporation. Selling Radio on time is something distinctly new in the radio industry.

The radio trade has been waiting for many months for the announcement that nationally advertised radio products could be sold on partial payments like the washing machine or phonograph. Now the radio dealer can sell quality radio on a 10% down payment, and the balance in monthly installments. Arrangements have been made by the Amrad Corporation to do the financing.

According to the details of the plan announced by H. J. Power, Vice-President and General Manager, the small dealer is able to sell radio on partial payments without increasing his capital a single cent. In other words, the small dealer with limited capital is placed on the same footing with the large jobber. Moreover, the potential market for radio sets that can be sold by either the small dealer or the large dealer is enlarged ten times or more, for now anyone can purchase the highest grade equipment on easy terms.

One of the main difficulties in the past in selling the better radio apparatus has been the relatively high initial cost. How many are able to lay down \$225.00 for a good set and accessories? It was to meet this situation that the Amrad Partial Payment Plan was prepared after an exhaustive survey of trade conditions.

Weather-Proof Clothing

An item which should be in the clothing equipment of every yachtsman is some form of weather and water proof garment. For years the accepted form of rainy day clothing on yachts has been the oil skin suit or coat. After digging these garments out of the locker and carefully pulling them apart so that one could get into them, it was necessary to watch your step in order to avoid sticking to anything with which you came in contact. All this has now been changed. The modern weather proof garment is a wind, water, and cold proof affair, which is made of a fabric with a ply of pure rubber between. This is made so that it will not peel, crack, or become sticky. When dry it is as soft and flexible as any other woven fabric, and can be rolled or folded up into a very small space. When worn, it slips on over the head and is fitted with an adjustable hood which completely protects the wearer from water and spray of any kind. It combines all the desirable features of water proof clothing, with none of the disadvantages of the earlier types.

Anybody Can Be Pilot Now

(Continued from page 43)

Fixed Red Light, and in order to forecast the exact time the turn should be made, we step with the D end of The Pilometer the distance along this course to the first turning point and apply the T end of the instrument to the time scale, which reads four minutes and forty seconds. Therefore, our first turn will be made at 8:14:40 A. M. In the same manner we step the distance to the next or second turning point with the D end and apply the T end to the scale, which reads two minutes and forty-five seconds, which makes our arrival time at the second turning point 8:17:25 A. M. The next leg is very short, but The Pilometer gives us a reading of one minute and twenty seconds, which makes our third turn come at 8:18:45. The next leg, which is E x S and brings us between the light house and buoy N 6, by The Pilometer takes one minute and thirty seconds. This causes us to turn to the next leg at 8:20:15. This next and last leg is along the course N E and carries us directly to the dock. Spanning the distance from the last turning point to the dock, with the D end of The Pilometer and applying the T end to the time scale, we find three minutes and fifty seconds are required to bring us to the dock. This brings us to the dock at exactly 8:24:05 A. M., having negotiated the distance to the town in fourteen minutes and five seconds, or at the rate of $14\frac{1}{2}$ knots.

Space does not permit of the further description of the many other usages to which The Pilometer can be put in open waters before casting of off shore positions, etc., but suffice it to say that new usages and applications are constantly being found for it and the using of The Pilometer is doing much to improve piloting among amateurs, as well as to increase their pleasure and safeguard their craft.

The Sport Twin



Weighs Only 40 Pounds —but It's Sturdy

PURRING busily away at the stern of your boat, this sturdy little "twin" motor adds a new restfulness to "Evinruding."

Long miles of watercourses seem to melt away in your wake, for this new Evinrude is so quiet and vibrationless that you scarcely realize its speed.

Weighs only 40 pounds—a schoolboy could carry it, clamp it on, and safely operate it. Starts instantly, at a pull of the Easy Starter. Magneto in flywheel—no batteries. Automatic Reverse and Safety Tilt-up. Beautifully finished in aluminum and nickel. *And you know it's right because it's a genuine Evinrude!*

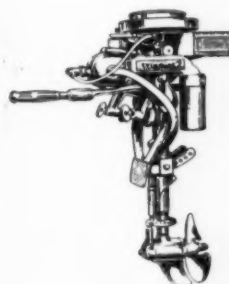
And the old-reliable Evinrude Single! For downright hard work, long life and economy—at a low purchase price—this famous Evinrude motor has never been equalled. This year it's better than ever.

Ask your sporting goods or hardware dealer today about the complete Evinrude line of detachable and built-in boat motors. Write us for new Catalog.

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35 H. P.

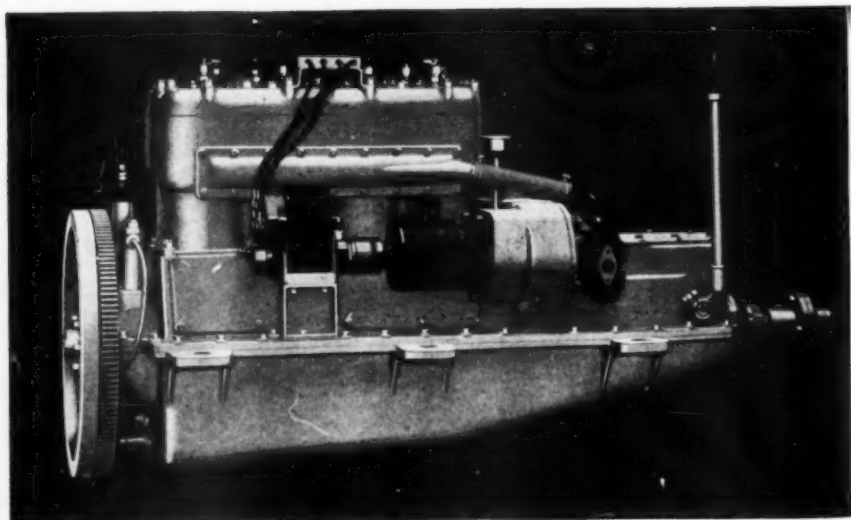
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Developing from 20 H.P. to 40 H.P.
Weight 950 pounds
\$775 to \$950

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Developing from 40 H.P. to 55 H.P.
Weight 700 pounds
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F. O. B. DETROIT, MICH.



Advertising Index will be found on page 138

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Here's just the motor the whole marine world has been waiting for. Not too large or expensive to be out of your reach, and yet powerful enough to answer your requirements.

The specifications above tell the story—and so do the prices.

Think of having a remarkable, powerful, economical, husky motor of this size at such attractive prices.

Wherever this motor has been shown it has created a sensation.

Remember this new motor has a 5-bearing crankshaft and a 5-bearing camshaft. The camshaft is submerged in an oil bath. The propeller shaft and instrument shaft are carried on a double row of annular bearings.

The demand is tremendous. Better act now for quick delivery. Write us for full information and details.

Other Kermath Motors

1 cyl.—3 H.P.

2 cyl.—4-5 and 6-8 H.P.

4 cyl.—12-16-20 H.P.

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Conditions Governing Long Distance Races

The New York and Atlantic City Race on June 22-24

THIS race will be under the auspices of the Atlantic City Yacht Club, Atlantic City, N. J., and the Columbia Yacht Club, New York, N. Y., for the James Craig Perpetual Trophy and trophies offered by the Columbia Yacht Club and Atlantic City Yacht Club, under the sanction and rules of the American Power Boat Association, June 22-24, 1923.

Open to cruisers powered with marine motors. Class A: Cruisers 30 to 60 feet, waterline length. Class B: Cruisers 60 to 90 feet, waterline length.

This race will be run simultaneously from New York to Atlantic City and return, and from Atlantic City to New York and return.

The race will consist of two legs, with boats in control over Saturday, June 23, as follows: The first legs will consist of runs from New York to Atlantic City, and vice versa, on Friday, June 22. The second legs will consist of the return runs from Atlantic City to New York, and vice versa, on Sunday, June 24. The times made over each leg will be combined to determine the winner. The length of time during which the boats are in control over night and over June 23, will be deducted.

Course.—The course for this race will lie between the Club House of the Columbia Yacht Club, at 86th Street and the Hudson River, New York, N. Y., and a line bearing northeast from the center of the dock of the Atlantic City Yacht Club, Atlantic City, N. J. The length of each leg will be ninety-two miles, or a total of 196 nautical miles.

Start and Finish Lines.—Off the Columbia Yacht Club, 86th Street and the Hudson River, and a line bearing northeast from the center of the dock of the Atlantic City Yacht Club, Atlantic City, N. J. Suitable stake boats will be provided at each end, a description of which will be furnished each contestant before the start.

Note. The channel is well marked and lighted by buoys and may be safely entered by small craft in all weathers. Pilot boats will be furnished for taking strangers through the Atlantic City Inlet, if desired.

Time of Starts.—Leg No. 1.—New York to Atlantic City, 7 A.M., June 22d, daylight saving time.

Leg No. 1.—Atlantic City to New York, 7 A.M., June 22d, daylight saving time.

Leg No. 2.—Atlantic City to New York, 7 A.M., June 24th, daylight saving time.

Leg No. 2.—New York to Atlantic City, 7 A.M., June 24th, daylight saving time.

Choice of Courses.—Competing boats will be allowed to select the direction in which they will run the race, that is: whether their first start will be made from Atlantic City or New York.

Measurement and Rating.—Competing boats will be measured, rated, and handicapped according to the 1923 American Power Boats Association rules. Boats in each class will race as one class irrespective of the direction in which they choose to run the race, that is: the highest rating boat in the race, irrespective of whether she starts from New York or Atlantic City, will be the allowing (scratch) boat, and all other boats will be handicapped in relation to this one scratch boat.

All competing boats will be measured by the official measurer of the A. P. B. A. or one of the assistant measurers and certificates must bear date of current year.

Note: Measurers or owners need not specify the r.p.m., but revolutions will be calculated according to paragraph E, 1923

American Power Boat Association rules, which reads as follows: "It shall be the duty of the owner (or an authorized and qualified representative) to take actual revolutions of the motor with an approved revolutions counter and report same to the Race Committee in writing immediately after the boat finishes. Observations shall be taken at thirty minute intervals during the race. Of the revolutions so reported, 25 per cent, showing the maximum, shall be averaged and used as the r.p.m. for computing the h.p. of the motor." Draft measurements specified on the written certificates will be checked up by a measurer appointed by the Race Committee within twenty-four hours of the starting time. Owners must put their boats at the disposal of the Race Committee for this purpose.

Equipment.—All boats must be fully equipped for cruising and in addition to equipment required by A. P. B. A. rules, must carry cushions, blankets, ice box, compass, two anchors with twenty fathoms of cable each, provisions for five days, charts and lead lines. All equipment must be of such a nature and quantity as would be carried by a boat in actual cruising trim for the number of crew on board in the race. Competing boats must carry a suitable tender.

Power and Fuel.—Form of power plant shall be one or more internal combustion motors designed and built in America for marine propulsion purposes. (Use of sails prohibited.) All gasoline must be carried in fixed tanks, permanently piped and a sufficient quantity to cover 125 per cent. of the course. Boats may refuel during the night control if they so desire.

Inspection.—Boats must report to the Race Committee at either the Columbia Yacht Club or the Atlantic City Yacht Club before 3 P.M. on the day previous to the race, for inspection.

Time Allowance.—American Power Boat Association Tables:

Prizes.—The boats in Class A making the best corrected time for the two legs considering all boats to be sailing in one class will be awarded the James Craig Trophy in accordance with the terms of the Deed of Gift governing this trophy. A valuable first prize, offered by the Columbia Yacht Club, will also be presented to become the property of the owner of the boat in Class A making the best corrected time for the two legs considering all boats sailing in one class. The National Association of Engine and Boat Manufacturers will also present to the winner a solid silver medal. A valuable first will also be presented to the boat in Class B making the best corrected time.

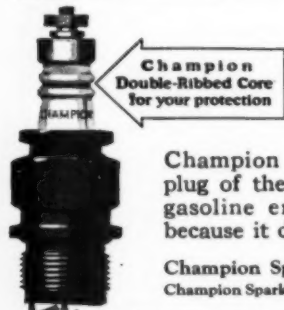
Second prizes will be presented in each class if a total of five boats start; third prizes if seven boats start, etc. A time prize will be presented to the boat making the best elapsed time in each class for the 196 nautical miles.

Note: All the permanent prizes will be cups, trophies, or merchandise of the winner's own choice and selection. The total value of the prizes to be presented by the Columbia Yacht Club, the Atlantic City Yacht Club, and the Atlantic City Hotels will be approximately \$700.

Entries.—Entries close June 18, at which time a measurement certificate must be received. Entries should be made to the Chairman of the Race Committee of the Atlantic City Yacht Club or the Chairman of the Race Committee of the Columbia Yacht Club.

Race Committees.—Atlantic City Yacht Club: Orville T. Crane, Chairman, Victor J. Fisher, Charles P. Tilton, Warner Lindsay, Jr., Thomas P. Endicott. Columbia Yacht Club: Charles F. Chapman, Chairman, 119 West 40th Street, New York; C. H. Moore, Charles Baeder, R. E. McAllister, W. B. Fox, Jr. National Association of Engine and Boat Manufacturers, Ira Hand.

(Continued on page 106)



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CENTURY
CO.

The Express Cruiser Championship of America, June 30

(Continued from page 104)

The Middletown Yacht Club of Middletown, Conn., will conduct the A. P. B. A. Express Cruiser Championship of America at the same time as the Express Cruiser Championship and the Cruiser Championship of the Connecticut River on June 30. These races will be opened to express cruisers as defined by Rule VI, division 2, of not less than thirty nor more than sixty feet L. W. L.

Course.—All events including the first leg of the Express Cruiser Championship. 50 nautical miles from starting line between Committee Boat and Yacht Club docks at Middletown, Conn.

On port hand Gas Buoy off Saybrook (S-4 and Bell 8) to finish line between Inner and Outer Stonington Breakwater Lights.

Time of start (daylight saving time), 12.00 noon.

Second Leg of Express Cruiser Championship.—Sunday, July 1, Express Cruisers and such of the other entrants as care to join in the cruise, will proceed to New Harbor, Block Island. The following day, July 2, the second leg of the Express Cruiser Championship will be started from the entrance of New Harbor, Block Island.

Course.—50 nautical miles from the Bell Buoy off New Harbor, Block Island, R. I., to finish line established due south of the Sachem's Head Yacht Club on Chimney Corner Reef and between Sachem's Head Yacht Club and Committee Boat anchored north of the extreme western end of Faulkner's Island, Conn.

Time of start (daylight saving time), 10.00 A.M.

A race for the Speed Cruiser Championship of America will be conducted at the same time, and over the same course, and will be opened to speed cruisers, as defined by Rule VI, division No. 2. Also, there will be a class for cruisers as defined by Rule VI, division No. 1, for the Cruiser Championship of the Connecticut River, over the first fifty mile portion of the course previously described.

Measurement.—Rule V.—Boats must be measured by the measurer of A. P. B. A. (or one of the assistant measurers) and give the L. W. L., area M. S., engine bore, stroke and number of cylinders. All measurements will be checked before starting by Race Committee's Measurer.

Crew.—Rule XII—Names and occupations of crew shall be handed to Committee in writing at least one hour before start.

Equipment.—As required by the American Power Boat Association rules and Government regulations.

Power and Fuel.—Explosive engine or engines operated by either gasoline, kerosene, fuel oil, alcohol or producer gas. No ingredient to increase the power of fuel permitted. (Use of sails prohibited.) All gasoline must be carried in fixed tanks, permanently piped, and of sufficient quantity to cover 125 per cent. of the course.

Inspection.—Boats must report at the Middletown Yacht Club, Middletown, Conn., before 10.00 A. M. on the day of the Race for inspection and checking of measurements.

Time Allowance.—A. P. B. A. Tables.

Prizes.—The National Association of Engine and Boat Manufacturers, Inc., has presented a Perpetual Challenge Trophy for competition under a Deed of Gift, to be held for one year by the Club whose representative wins the race; and there will be individual prizes as follows: First Prize, Second Prize if five start, Third Prize if seven start, and additional prizes up to one-third the number of entries. There will also be a Time Prize for the best elapsed time and separate Prizes covering the first leg of the course which also includes the race for the A. P. B. A. Connecticut River Championship.

A. P. B. A. record certificates will be furnished for the best record time in the championship event and for the best corrected time in the first leg which will be known as the Connecticut River Championship.

Other classes for the Cruiser Championship of the Connecticut River will be run over the same course as the first leg of the Express Cruiser Championship. The starting time for the cruiser classes will be at 10:00 A. M.

Prizes.—There will be a trophy emblematic of the Cruiser Championship of the Connecticut River presented by the Middletown Yacht Club: First, Second, and Third Prizes, etc., up to one-third of the number of starters, an A. P. B. A. record certificate for the best corrected time and a Time Prize for the best elapsed time.

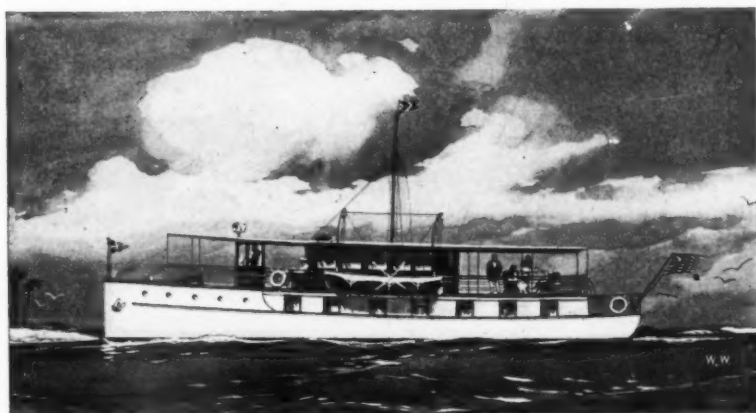
Entries.—In all classes close June 23 at which time Measurement Certificate must be received, and should be sent to Harold A. Williams, Chairman Regatta Committee, Middletown, Conn., or Commodore M. S. Cornell, Jr., Middletown, Conn.

(Continued on page 112)

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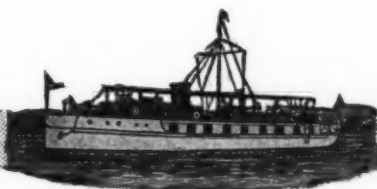
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Advertising Index will be found on page 138

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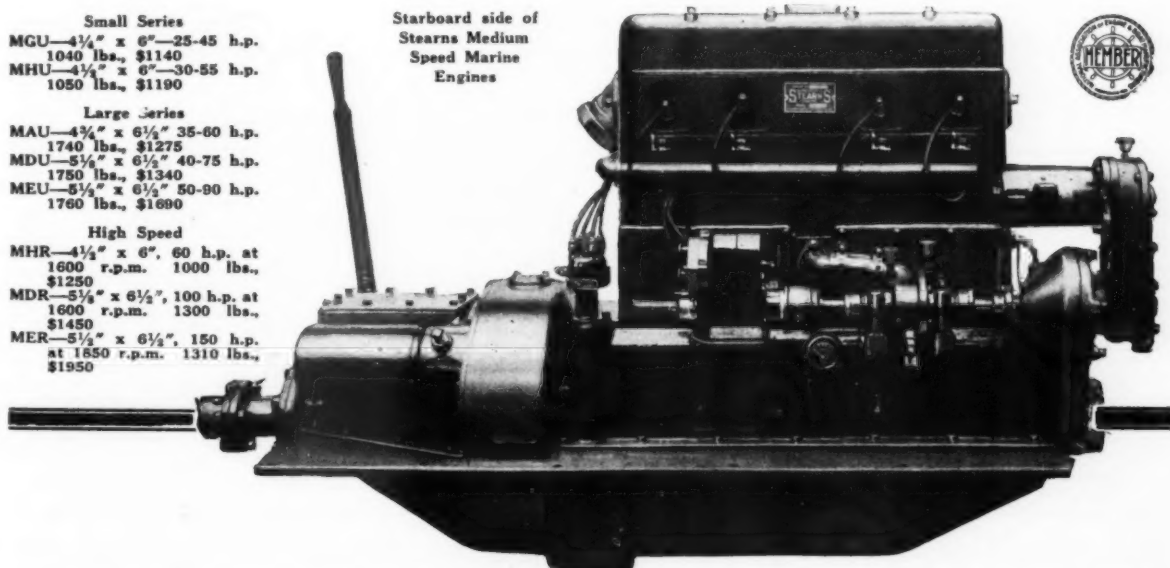
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Plans and specifications of the following boats are included: Edith, a 15-foot runabout; Jane, an 18-foot runabout; Katherine, 30-foot cruiser; Dorothy, a 25-foot runabout; Zenith, a 25-foot cruiser; Cyclone, a 36-foot auxiliary; Eclipse, a 40-foot express cruiser; Magnet, a 28-foot cruiser; Tornado, a 45-foot auxiliary schooner; Broncho, a 36-foot cruising runabout; Shark, a 21-foot utility runabout; Claire, a 36-foot express cruiser.

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And the Caille Liberty Motor is a "bear cat" for weeds. No matter how thick they may be, it just snakes its way through like an eel. Shallows, too, mean nothing in the life of this little Trojan. "Drives your boat where'er 'twill float." You need no pier for the Caille Liberty Motor will drive your boat well upon the shore when landing and you can attach it to the boat on shore when starting out. These are all exclusive Caille Liberty Motor features. No motor of the old vertical type can meet these claims.

When it comes to speed and power you can't beat the Caille Liberty. And its motorcycle control makes it the easiest motor in the world to operate. Easily carried and so simple in design that we can sell it complete for \$85.00—a mere fraction of the price of old type motors. Don't buy until you see the Caille catalog. A postal card brings you the best rowboat motor news you ever read.

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Dell Rapids,
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Dear Sirs:

I have used one of your Liberty Drive motors during the summer on a lake here which is full of stumps and sunken logs in a great many places. I also have to go about a half mile every day for milk when at our cottage, through a bay that is grown up with moss very thick, especially during July and August.

I am the only one that can make this trip direct, out of a great number of motors used at this point. I go through moss and weeds and stumps with no fear of injury, or clogging up the motor, and the ease with which it starts is a marvel to some of them that yank and twist from a few minutes to half an hour.

In a few words, I might say that it is perfectly satisfactory in every way, and I consider it the only all-round motor on the market today. Easy starting, no danger from stumps and sunken logs, goes through weeds or moss, can land in shallow water any place without the necessity of a pier, and simplicity and ease of manipulating.

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PHILADELPHIA

The Handicap Cruiser Championship of America

(Continued from page 106)

The Philadelphia Yacht Club will conduct this famous event on Saturday, August 4, in its home waters on the Delaware River. This race will be open to cruisers as defined by Rule VI, division No. 1, of less than 45 feet and more than 30 feet L. W. L., owned by a member of a club enrolled in the American Power Boat Association.

Course.—Starting line and finish line will be established between the pier of the Philadelphia Yacht Club, at Essington, Pa., and a mark boat anchored directly opposite. Turning point will be Ship John Light House.

Distance.—Approximately 84 nautical miles. Government aids to navigation may be disregarded.

(Note: The Committee will be glad to furnish any information or local knowledge regarding the course which may be requested.)

Time of Start.—All boats will start together and race as one class. The starting time will be between six and nine A. M. (Standard Time), August 4, 1923. The exact time of start will be announced by the Committee on the day previous.

The warning signal will be given ten minutes previous to the starting signal and a preparatory signal five minutes previous to the starting signal.

Measurement.—Rule V—1923 A. P. B. A. Rules:

Boats must be measured by the measurer of the A. P. B. A. or an assistant measurer designated for this race.

Certificates bearing date of 1923 must give L. W. L., area M. S., engine bore, stroke, cycle, number of cylinders, and owners' statements of maximum revolutions at which motor is to be run in race.

All measurements will be checked by F. W. Horenburger, New York, N. Y., on the day previous to the race at the Philadelphia Yacht Club.

The method of determining revolutions per minute of the motor during the race will be announced by the Committee, previous to the start of the race. The R.P.M.'s so obtained will be used in calculating the boats' ratings for the purposes of the handicaps used in this race.

Crew.—Under Rule XII, 1923 A. P. B. A. Rule Book:

Names and occupations of crew shall be handed to Committee in writing at least one hour before start.

Equipment.—All boats must be fully equipped for cruising and in addition to the equipment required by the American Power Boat Association Racing Rule, must carry cushions, blankets, icebox, compass, two anchors with twenty fathoms of cable each, provisions for five days, charts and lead line. All equipment must be of such a nature and quantity as would be carried by a boat in actual cruising trim for the number of crew on board in the race.

Power and Fuel.—Explosive engine or engines, operated by either gasoline, kerosene, fuel oil, alcohol or producer gas. No ingredient to increase the power of fuel permitted. (Use of sails prohibited.) All gasoline must be carried in fixed tanks permanently piped and of sufficient quantity to cover 125 per cent of the course.

Inspection.—All boats must report at the Philadelphia Yacht Club, Essington, Pa., before noon on the day previous to the race for inspection and the checking of measurements.

Time Allowance.—A. P. B. A. Tables. Computed after finishing.

Prizes.—The New York Athletic Club has presented a Perpetual Challenge Trophy for competition under the Deed of Gift, to be held for one year by the Club whose representative wins the race and individual prizes as follows will be presented by the Philadelphia Yacht Club: First Prize, Second Prize if five start, Third Prize if seven start, and Time Prize for best elapsed time. An A. P. B. A. record certificate for the best corrected time. There will be a fourth prize if nine start, a fifth prize if eleven start, a sixth prize if thirteen start, a seventh prize if fifteen start, etc., on the basis of one additional prize for each two additional starters.

Entries.—Entries close ten days previous to the start, at which time, measurement certificates must be received. Entries should be sent to Commodore A. B. Cartledge, 1514 Chestnut St., Philadelphia, Pa.

Race Committee.—A. B. Cartledge, 1514 Chestnut St., Philadelphia, Pa., Chairman; W. Roy Halsey, Box 77, Mamaroneck, N. Y.; R. B. Clark, 21 W. Lancaster Avenue, Ardmore, Pa.; E. C. Headley, 600 Bullitt Bldg., Philadelphia, Pa.; C. F. Chapman, 119 W. 40th St., New York City.



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A Light Twin built around big bearings—That's the Elto—with 23 square inches of crankshaft and connecting rod bearings—almost double the bearing surface of other twins in the light weight class. How big are the bearings? Ask that question before you buy. Lightness itself adds nothing to trouble-free, long service.

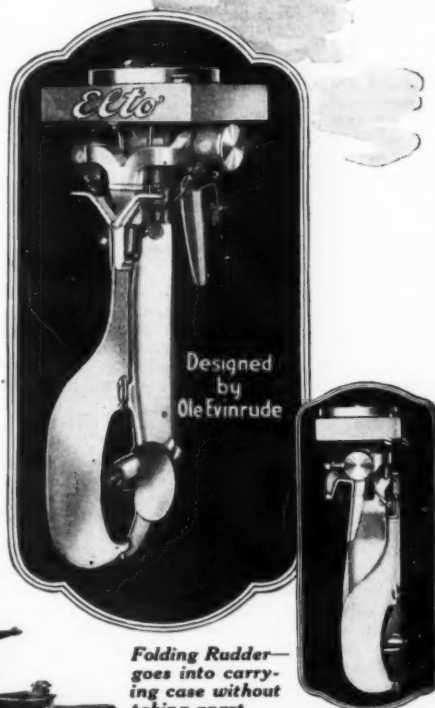
An Extra Horsepower. Nothing can take the place of horsepower and you need 3 full H.P. to get adequate speed on seaworthy, substantial boats—or to land you first across the finish line with light racing boats. How much H.P. by piston displacement? Ask that question and don't be satisfied by an answer that says a motor develops such and such H. P. If it hasn't the horsepower in the cylinders, it's mighty improbable that it will develop it at the propeller.

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Ruth, A Smart Fisherman's Cruiser

(Continued from page 36)

shown on plan. The canvas at the forward end to overlap. The sides if finished natural are to be of mahogany and applied on canvas and marine glue, so as to make a watertight joint. There will be a rabbetted corner post on each side forward and aft. There will also be an oak beam which shall be fastened to cleats on frames at cabin end. There will further be an inside coaming to align with side coamings. Coamings are to project to take sheathing. The cabin to be sheathed with $\frac{3}{4}$ by 3-inch tongue and grooved mahogany ceiling, laid diagonally. This is to be fastened to post, upper beam, and door framing. The forward end of cabin and sides to be of $\frac{7}{8}$ -inch mahogany screw fastened to post and to coamings on a layer of marine glue. There will also be a $\frac{7}{8}$ -inch roof band. Beams are to be of $1\frac{1}{4}$ by $1\frac{3}{4}$ -inch oak sawn to proper radius. They are to be let into roof band, and securely screw fastened to same, from the outside. There will be a partition immediately aft of forward cabin end. This will be of $\frac{3}{4}$ by 3-inch ceiling fastened to cleats on bottom and door framing and cleat on sides. Flooring to be $\frac{3}{4}$ -inch white pine laid on a line approximately as indicated. The center boards are to be made removable and cleated for access. There will be an additional partition 6 feet 3 inches further aft and made up in the same manner. A clear opening of 20 inches will be allowed forward and 24 inches aft. Suitable double doors be provided at each opening. These are to be of panel mahogany and made as per plan. The end of the cabin to have a clear opening of 24 inches and to be provided with double doors. The upper panel in the forward door and the cabin end, to have fine mesh bronze gauze for ventilation. The roof is to be covered with $\frac{5}{8}$ by 3-inch white pine. This is to be of tongue and groove type and a V edge on the inner side. It is to be galvanized nail fastened and to finish flush on the outside. It is to be dressed and well sanded and have a priming coat of lead paint. It will be covered with a layer of canvas duck in heavy paint or marine glue. The canvas is to be in a single width and about 8 oz. double filled. Allow an opening at the after end for the companion way. Put in the hatch coamings and canvas to lap on to the same. There will be an outside coaming over the canvas, or rabbet into the coaming and insert a strip or moulding after the canvassing is completed.

The canvas is to be painted with a filler coat and sanded down to a smooth surface. It will then have two coats of either enamel or marine paint of a desired color. There will be a hatch for access to the deck forward. This will have a frame and coaming before canvassing. Then an outside piece or rabbetted piece to make a watertight joint. There will be a cover to fit over the outside. Make the outside frame, then edge nail with $1\frac{1}{2}$ -inch strips, and no beams will be necessary. Cover with canvas and finish with $\frac{1}{2}$ -inch of half-round moulding. The outside of the cabin house is also to have a $1\frac{1}{4}$ -inch half round moulding. The forward end on the corners to be rounded to about a 2 or $2\frac{1}{4}$ -inch radius. Mouldings to be screw fastened and holes wood plugged.

Forward end of cabin is to form toilet room. The sides will be either finished to the planking or to have a lattice sheathing of $\frac{3}{4}$ by 3-inch pine or cedar strips. These are to have a slight V-edge and a space of $\frac{3}{32}$ inches between. Provide a platform to receive a suitable closet. Also provide and install a suitable wash bowl. This is to be of the enamel type and installed with an outlet drain, faucet, and a gravity tank of such capacity as may be decided upon by the owner. The toilet room is to be provided with necessary coat hooks, etc. The doors for the main cabin to have suitable bronze hinges and a suitable pull and latch. The main cabin is to have a seat berth on each side, the fronts of which are to be panelled in mahogany or combined with cypress. These berths are to be approximately 20 inches high and spaced as shown on plans. They will have the necessary cleats on top and be covered with white pine, allowing an opening for access to storage space below. Cabin sides as high as the clamp to be sheathed in the same manner as the forward room. There will be double doors of mahogany for entrance to the galley mounted on suitable bronze hinges, and provided with a suitable bronze rim lock and bolt. There will be in the galley space a permanent built-in seat berth on the starboard side in a similar manner to the forward seats. The sides should also be finished in a like manner and the end of the berth sheathed. A galley will be built in on the port side approximately as shown on the plans. A 10 by 12-inch enamel

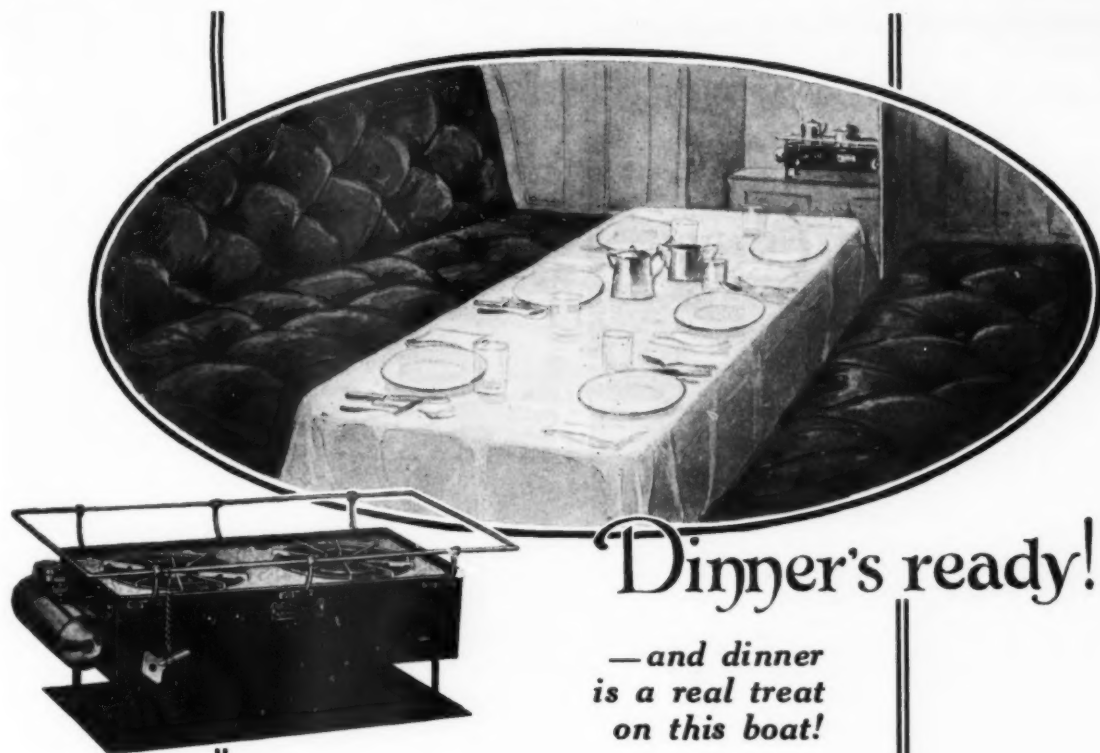
sink will be furnished and installed as shown with a suitable bronze faucet, and a gravity tank of such capacity as may be required by the owner. The galley side to have two drawers on top which are to be provided with suitable pulls. There will also be two lockers below with doors on bronze hinges and suitable catches. The sink is to be installed as shown, with a drop leaf close by for a work table. The entire top is to be copper lined and to have a $1\frac{1}{2}$ -inch ledge. The after end is to be made into an ice box which extends under the raised platform. The ice compartment to be underneath and arranged to fill from the outside. The after end of the galley is to be made as part of the ice box, and to have regulation ice box door with shelves, etc. Ice box to be made with a double wall filled with crushed cork, allowing a 1-inch space. It is to be lined with galvanized iron or zinc. The ice compartment to have a partition about 12 inches deep with bars above for circulation. Water to be drained into the bilge or discharged by pump. The box is to be built of $\frac{3}{4}$ -inch tongue and grooved cypress stock. The space over the ice box can be used for a stove, of which a suitable two burner type shall be provided. The cruiser galley stove using gasoline fuel is recommended.

A suitable companion stairs of 1-inch mahogany stock with let-in steps will provide access to the cockpit. There will be a suitable fitting at the top and a stop at the bottom. The top step is to be made permanent and to extend entirely across and braced from underneath. Stairs are to be built so as to completely cover the motor flywheel. Two $\frac{7}{8}$ -inch mahogany doors provided with regulation door sill, and stop to be fitted to the companion entrance. Suitable bronze hinges, bolts, and pulls, and a bronze hasp and Yale lock to be supplied. The cabin sides are to be provided with six 7-inch regulation post lights. These may be either galvanized iron or brass, as selected and are to have extension rims extending through the sides with a flange on the outside. In addition there will be two port lights of the same size in the forward end of the cabin. A sliding companionway with mahogany runners, shaped as indicated, should be provided for the cabin entrance. Runners should be 1 inch wide at the top edge and protected with a strip of brass $\frac{3}{8}$ by $1\frac{1}{4}$ inches, which serves as a track. This should be properly aligned and screwed flush. Provide a hatch cover built up on three shallow beams, covered with $\frac{3}{4}$ -inch stock, edge nailed. Provide stops forward and aft and align hatch so that it will track and install a half round tube on each side. This is to be fitted so as to extend over the track and be flush on top, extending under the track sufficiently to hold it in place. A hatch cover is to be canvased in the same manner as the forward hatch. A coaming of 1-inch mahogany stock with a rounded corner piece, and securely screw fastened from underneath with counter sunk washers, is to be installed as shown. It should be cut out to allow the hatch cover to run through freely. A $\frac{3}{4}$ by $1\frac{1}{2}$ -inch mahogany cap will finish off the coaming. It should be slightly rabbetted and screw fastened throughout. All holes where exposed to be counter-bored and wood plugged.

Cockpit: The alignment for the cockpit will be approximately as shown on the drawings and will be supplied with a raised platform over the motor, ice box, and berth. A frame having a heavy beam on the top and on the floor line will support this. The cover is to be cleated so as to permit the center section to be readily removed. At the side, a hinged cover will be fitted over the ice box opening. The back of platform and cockpit may be either sheathed with ceiling or a solid panel, and is to fit over the flooring against the coaming. Beams should be $\frac{7}{8}$ by 3 inches either of oak or yellow pine, and are to be fastened to a $1\frac{1}{2}$ by 2-inch riser. Cockpit will be decked with $\frac{7}{8}$ -inch white pine and have a $1\frac{1}{4}$ by $1\frac{1}{4}$ -inch strip fastened in a line with the trimmer on each side and at the after end.

A hatch opening can be supplied over the motor as indicated on the deck plan, which can be finished flush. The cockpit floor can then be covered with canvas duck, the ends to be tacked onto the outside strip. Canvas should be laid in a similar manner to cabin roof. There will be a $\frac{7}{8}$ -inch mahogany coaming, shaped as indicated on the plan, and securely screw fastened to the trimmer. There will be an additional coaming on the bottom edge. The cockpit decking will extend through to the side of the hull and the space between the bottom coaming and the hull can be used for the storage of can goods, etc. The

(Continued on page 132)



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Best Lumber for Boats

(Continued from page 39)

fills the bill. For masts and spars of all kinds it has no equal.

Ash. Fenderwales and rubstreaks are often made of ash. It lends itself easily to the mold of the boat, holds fastenings well, while its cellular construction makes it very resistant to crushing impacts.

Mahogany is pre-eminently the wood used for trim. It is strong, clear grained, holds all kinds of fastenings well, resists water, is worked easily and finishes beautifully. It admits of refinishing year after year without any diminution of its surface qualities with perhaps an increase in its richness of color. Its high cost prohibits its use more generally in the construction of boats.

In Teak one finds the ideal wood for boatbuilding, but like mahogany its cost is prohibitive. It has strength, durability, resists water to a high degree, is worked easily, takes on a high polish and in addition contains a resinous oil that makes it resistant to insects. Of all the woods it is the one that stands up best under tropical sun and zero weather. Even without the protection of paint or other finish it never approaches checking in the sense that term is applied to other woods and as for shrinking one can hardly think of the term in connection with teak.

J. E. M., Norwich, Conn.

Good Qualities of Many Woods

EVERY amateur realizes that wood is the principal component material in boat construction, but when it comes to building or buying a boat, he appreciates the need of information concerning the best available wood for his purpose. It is a fact that there are some 30 odd varieties suitable for different purposes in boat construction, but by the process of elimination and location each man can guide himself to a great extent.

All wood is classified first into one of the two prime groups—pine or evergreen, and this refers to those whose leaves do not fall off in winter, such as spruce, hemlock and cedar; the other or hard wood varieties, include ash, beech, birch, oak, maple, poplar, mahogany, etc., which are not necessarily hard wood but come from trees which are not evergreen.

Under evergreen we have the following:

White Pine. A light, soft, straight grained wood; not very strong, but good for interior finishing in cabin and state rooms; excellent for pattern making and good for plugs to stop leaks due to swelling when wet. Weighs from 25 to 30 lbs. per cubic ft.

Yellow Pine. Sometimes called long leaf or hard pine. Loblolly and Cuban pine are included under this head. Strong and hard; excellent for heavy framing, decking, floorings, platforms and miscellaneous heavy work of all kinds. Weighs from 40 to 50 lbs. per cubic ft.

Short leaf or Caroline Pine. Has soft fibre; coarse grain and not so strong; splits very easily; only used for the cheapest work. Weighs about 32 lbs. per cubic ft.

Sugar or Western Pine. Is straight grained, soft and easy worked, similar to white pine. Very good for interior housework, but not much used in boats. Weighs about 22 lbs. per cubic ft.

Bull Pine or California Yellow Pine. Has closer grain than most other pines; very resinous, quite a good strong wood for framing. Weighs about 29 lbs. per cubic ft.

Oregon Pine or Douglas Fir. Is excellent for structural purposes. Used almost exclusively on the Pacific Coast for the same class of work as the hard pines are used on the Eastern Coast. Can be obtained in unusually large dimensions. Weighs about 32 lbs. per cubic ft.

Spruce. Is a strong tough wood; excellent material for joists, studs and general rough framing; fine material for masts, as it grows straight. Weighs about 30 lbs. per cubic ft.

Balsam Fir. Similar to other spruce but lighter in color and inferior in quality; very brittle and splits easily. Weighs 23 lbs. per cubic ft.

California White Fir. Also called silver balsam; not very strong and quite soft. Seldom used for boat work. Weighs about 22 lbs. per cubic ft.

California Red Fir. Also called Shasta Fir; soft, not very strong, but rather close grain and durable in the soil; used more for bridge timber and general building purposes. Weighs about 29 lbs. per cubic ft.

Hemlock. Somewhat similar in appearance to spruce, though much inferior as a building material. Is brittle, liable to be shaky and splits easily; has a coarse uneven grain and while it holds nails quite well, is generally soft and not considered durable. Used mostly for rough framing timber. Weighs about 28 lbs. per cubic ft.

(Continued on page 118)

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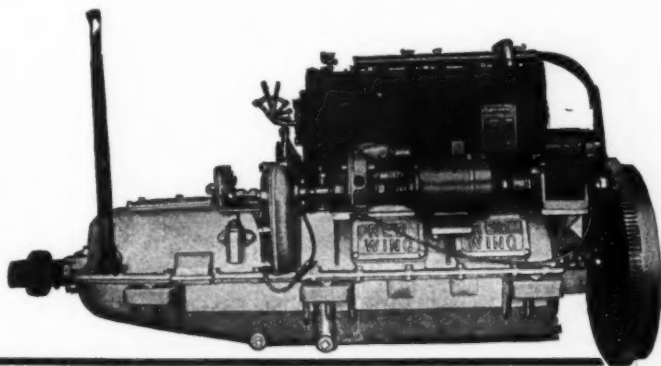
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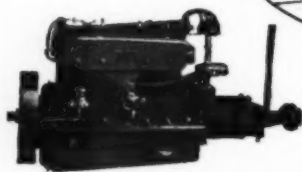
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Established 1883

Good Qualities of Many Woods

(Continued from page 116)

White Cedar. Soft, fine grained durable wood, but not very strong or tough. An excellent material for planking small boats. Much used for this purpose in the best building plants. Weighs about 25 lbs. per cubic ft.

Red Cedar. Has a reddish brown color; somewhat similar to white cedar in texture, but is stronger and more durable. Cannot be had in as wide pieces as the white cedar because it is a much smaller tree. Will last for years in the ground without showing signs of rot. Has a very pungent odor, which repels insects. Therefore, good for shelving and drawers of clothes closets, and for chests in which clothing is to be kept free of moths and other insects. Weighs about 30 lbs per cubic ft.

Cypress. Somewhat similar in texture and appearance to white cedar, being tougher, however, and of a slightly darker color; excellent material for planking small boats. Also used in some classes of joiner work. In house building it is extensively used for shingles and weather boards, also for interior finish. Finishes well in natural color, varnished. Weighs about 35 lbs. per cubic ft.

Hackmatack or American Larch. Sometimes called tamarack. Used principally for obtaining natural growth knees for ships and boat building. The knees are made by cutting out a part of the lower trunk, retaining the projected root to form the arm of the knee; these pieces are very strong, being formed by the natural growth of the roots from the body of the tree. They are shaped and fitted under beam ends and other places where angular bracing is required. Hackmatack is very resinous and a durable wood. Does not rot rapidly; warps very badly and is not well suited for planks.

Redwood. From the giant trees of California which grow to heights of 200 to 300 ft. Is dull red in color and while the texture resembles pine, is generally used in the West for the same purposes as pine is used in the East; it is inferior to pine on account of its softness, liability to splinter and because it shrinks badly. Weighs about 26 lbs. per cubic ft.

HARDWOODS.

Ash. There are three kinds: white, red and black ash. The white ash is most generally used for such purposes as interior fittings of small boats, oars, accommodation ladders, etc. Ash is very hard and tough; grain is coarse and it resembles oak somewhat in texture, strength and hardness. Has a tendency to become dry and brittle after a few years, making it less desirable for structural work. Weighs from 40 to 50 lbs. per cubic ft.

Oak. There are white, red, black, pin, live, English Oak, water oak and many others. White oak, however, is used most extensively for boat construction. Is hard and tough; cross grained and very strong. When quarter sawed, makes a beautiful grain on interior finishing, cabinet work and furniture. It is used where great strength is required, principally for framing, chafing strips, patterns, capping and for small boats. Weighs about 50 lbs. per cubic ft.

Red Oak. Similar to white oak except in grain and color, the grain being finer and closer, and the color darker and redder than white. Also softer than white oak. Weighs about 45 lbs. per cubic ft.

Hickory. The hardest, toughest and strongest of all American woods; used mainly for making tool handles. Weighs about 51 lbs. per cubic ft.

Cherry. Hard and durable wood, having a fine close grain; takes a very high polish and therefore used a great deal for cabinet work; very adaptable to imitations of more valuable woods; staining it black makes a good imitation of ebony; may also be stained to make a good imitation of mahogany. Weighs about 36 lbs. per cubic ft.

Birch. Resembles cherry somewhat in texture and color, though of a slightly lighter color. Well adapted to imitations of mahogany. Weighs about 47 lbs per cubic ft.

Maple. Is a light colored, fine grained, strong hard wood; takes a high polish; used for interior finish in houses and makes fine flooring. Weighs about 43 lbs. per cubic ft.

Beech. Is very hard, tough and has a close uniform texture which makes it desirable for tool handles, plane stocks, etc. Not much used for boat building on account of its tendency to rot in damp places; takes a high polish and is sometimes used in making furniture. Too brittle for delicate work requiring strength. Weighs about 42 lbs. per cubic ft.

Poplars. Is soft and brittle; shrinks badly when drying; warps and twists very badly in the slightest change of atmosphere. It is cheap. Has very few knots or other defects, works easily and the boards may be got in exceedingly wide sizes; is generally used for miscellaneous light plain work, false backs, filling, etc. Weighs about 26 lbs. per cubic ft.

Sycamore. Sometimes called button wood. Is hard, of a

(Continued on page 136)

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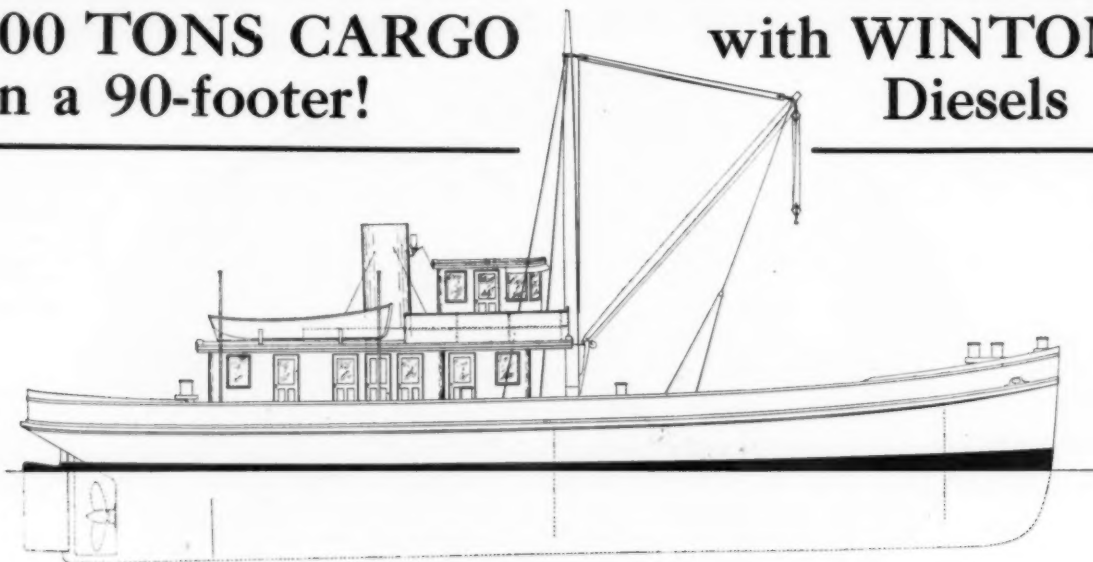
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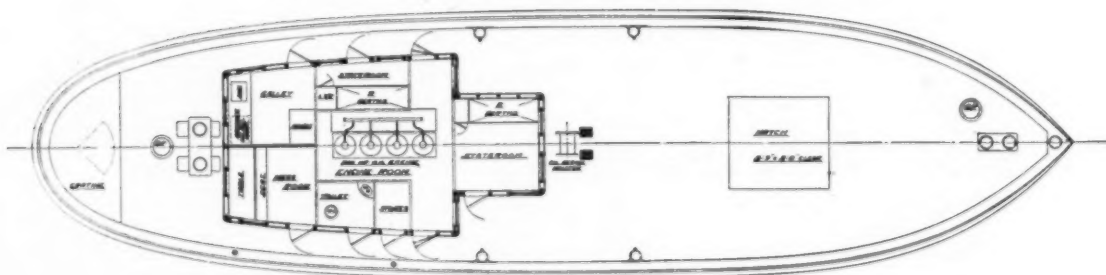
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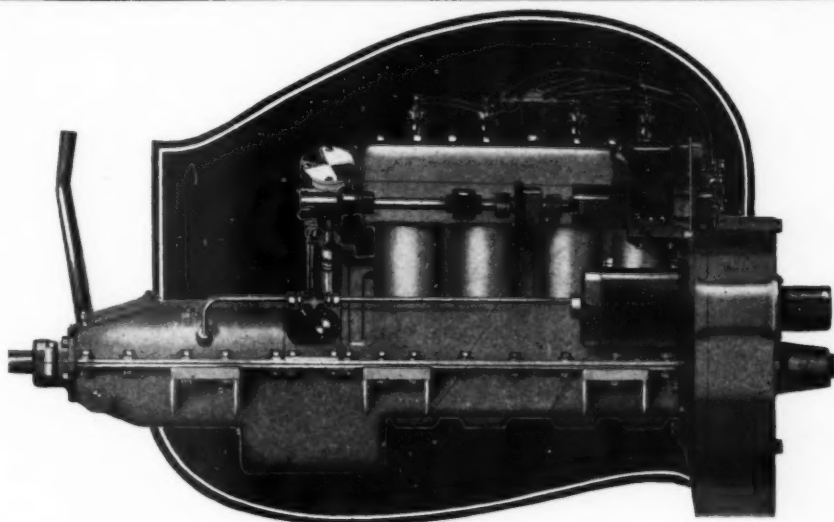
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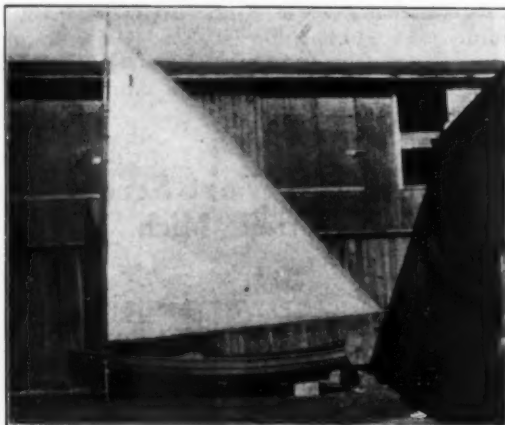
The Most Powerful Preventive of Marine Growth and Destructive Borers. A Hard Slippery Finish. Lasts a long time and is INVALUABLE FOR RACING. On Cruising Yachts saves its first cost many times over in expensive repairs and repainting work.

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Write for our catalog on Rowboats, Sailboats, and
Outboard Motor Boats.

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Skaneateles, N. Y.

How Chaos Came to Bayside

(Continued from page 27)

boisterously, kicking up an uncomfortable chop that put the rockers under our staunch craft, and set her nose-diving and tail-spinning. But to shift the figure from aviation to baseball, though she pitched hard she had an easy motion and limitless control.

In all our experience we have never known Chaos to roll more than a few degrees, and, after all, it is this latter motion which is, post-prandially, so disagreeably provocative.

We rode to our starboard bower, mainsail and jigger shivering in the spiteful puffs that leapt from the gray monotone of the northwest and purpled spasmodically the lumpy expanse of the harbor. The jib was loosed and ready to run up. All hands were gathered in the cabin for the impressive moment which was to consummate the sale.

Moist-eyed and with trembling hands Captain Haze received our miraculously-garnered wealth. The old chap's genuine regret at parting with the boat was only too apparent and our elation was tempered with sympathy for his loss.

As he turned to mount the ladder his glance roved round the familiar scene below and he murmured with almost the effect of a benediction, "She'll be a home for ye, boys; ye can live right into her."

We followed him on deck and an instant later began heaving in the cable to the rhythmic tempo of a sea chantey which the old man bellowed with interpolations such as, "Yip, hoo! yip yahoo! heave her in, boys! Yip, yahoo!" Unfortunately the above which was intended as an exhortation served only to render us helpless with laughter.

With the anchor at short stay Eddie whipped the skiff alongside, Captain Haze bade me farewell, dropped into the boat, and was put ashore in jig time.

Chaos meanwhile was jumping like a broncho on the short vicious seas that had made up on the turn of the tide. A few minutes previously I had noticed a coasting schooner coming to anchor on our port beam not far distant. Now I became suddenly aware that she was changing bearing rapidly.

To my horror I realized that Chaos had tripped her anchor and was driving stern first toward the dock, less than a hundred yards away. At the moment Eddie, returning in the skiff, was close aboard and he, too, now divined our predicament. Scrambling over the rail, he fled forward like a shadow and ran up the jib. I spun the wheel hard over and prayed that she'd fill away. She did, but on the port tack, towards shore and a jumble of motorboats. I gave her a good full, then spun the wheel over in an attempt to bring her about. We were perilously near the outer fringe of boats. She came up sluggishly, faltered, and fell off again on the same tack. Then, desperately, I realized why. We were dragging the anchor and a couple of fathoms of chain from the starboard hawse! I heard a frantic bellow from the dock, "Jibe her! Jibe her! Ye'll go aground!"

I looked. I knew there wasn't room to jibe!

We were past the outer fringe of motorboats. We were among them. It was only a question of seconds before we must foul a boat, a mooring or go aground! I yelled to Eddie, "It's now or never; our last chance! 'Bout ship!"

Up, up, slowly into the wind she came, her mainsail thundering in a sudden squall. She hung uncertainly for an agonizing instant. Then Eddie, with a magnificent effort, backed the jib, stretching it to windward on an arm like a steel boom. It filled and Chaos came about, thereby averting wrecking herself and our young lives.

As soon as we got an offing we hove to and fished the trailing anchor, stowing it on deck; then began the long beat up the channel to the Battery.

Neither of us had ever handled a yawl before, nor, for that matter, any sailing vessel of the size of Chaos. This in itself rendered all the more marvelous our escape from a lee shore and the subsequent achievement of that exciting day. It seemed, moreover, a vindication of what Captain Haze had claimed for the performance of the old hooker that she could be handled at all by a couple of ex-naval reservists, who as a class are conceded to possess a decided ineptitude in the management of windjammers.

Not once in the course of that memorable beat to the Battery through the wrathful waters of New York Bay did Chaos ship a sea or duck her lee rail. She cleft the seas with the grace and keenness of a clipper ship, easy as a cradle in any kind of cross rip or nasty chop, eating to windward with the smooth facility of a Gloucester fisherman, shaking her canvas derisively in the face of the blackest squalls.

But we were soft with office work, with evening dalliance in club lounge, the flaps of flappers and the Biltmore lobby. The strain of our rigorous experience was already beginning to tell. Our muscles ached with the memory of the heavy, slithery chain and the massive anchor, with the snaking jib sheets that coiled and whipped viciously as we forced them to the cleats. Time passed like a flash. Hunger was forgotten in the febrile absorption of the moment.

(Continued on page 128)

PACKARD

What Packard Engineering Has Created for Yachtsmen

THE same quality of engineering that has made Packard motor cars, motor trucks and airplane engines foremost in their respective fields is available to yachtsmen in the new Packard Marine Engines. You can now secure an engine designed exclusively for marine service and fully up to Packard standards in both design and workmanship.

Special attention is called to the fact that these Packard Marine Engines are manufactured in the Packard engineering department, where every facility is provided for precise workmanship, careful testing and individual supervision by competent engineers.

Three marine types are offered. All have perfectly balanced 7-bearing crankshafts, machined all over, and are designed to operate dependably at 1800 R.P.M.

JUNIOR MODEL

6 Cylinders
3 $\frac{3}{8}$ " x 5"
268 cubic inches
45 H.P. at 1800 R.P.M.
Weight complete, 650 lbs.

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6 Cylinders
5" x 5 $\frac{1}{4}$ "
618 cubic inches
150 to 200 H.P.
Weight complete, 900 lbs.

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12 Cylinders
60° Vee type
5" x 5 $\frac{1}{4}$ "
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300 to 400 H.P.
Weight complete, 1150 lbs.



PACKARD'S CHRISRAFT
Winner of the Gold Cup Trophy
Race for 1922. Powered with a 6
cylinder Packard Marine Motor.
Speed, 43 miles per hour. A 26
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Chris Smith & Sons Boat Co., of
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MODEL
F-4

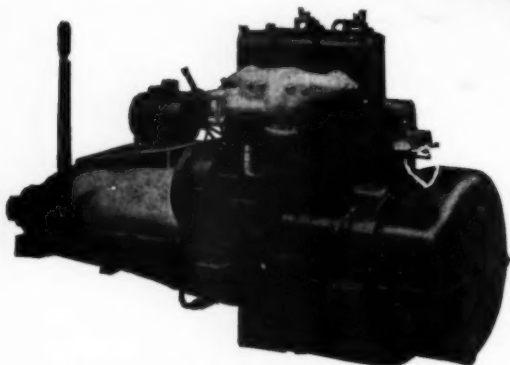
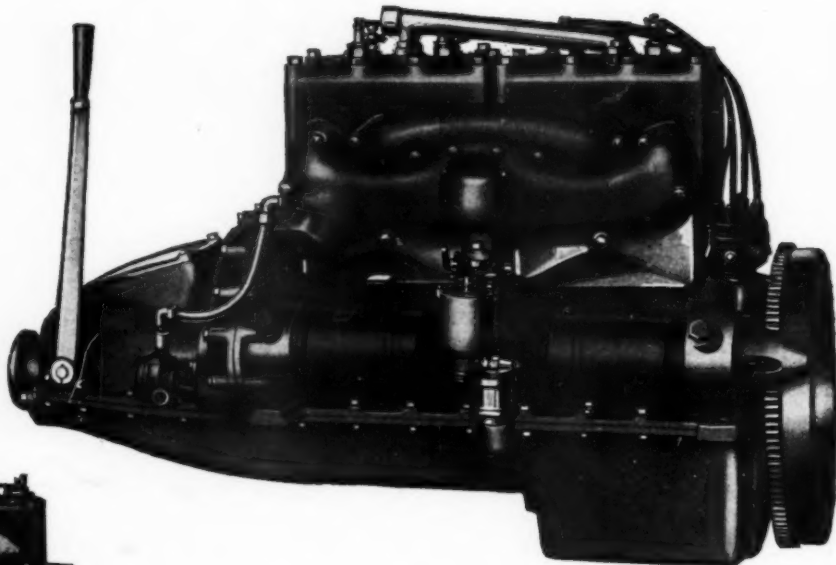
\$750.00

Complete with
Electric Starter

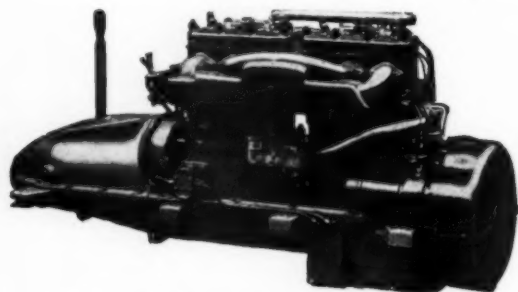
15-25 H.P. Medium Duty.

30-45 H.P. High Speed.

Weight 550 lbs.
Length 44".



D-2— 10-12 H.P. Medium Duty
15-18 H.P. High Speed
Including Electric Starter \$650.00



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E-6— 40-60 H.P. Medium Duty
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This policy is reflected in the 1923 series and its production basis. For the first time it brings within reach of the boating public, those superior qualities for which SCRIPPS is the symbol.

It is for this reason that the present series motors establish a standard of performance that, when measured by the dollar, remains unequalled and unchallenged.

Note: DEALERS AND BUILDERS: we have an interesting proposition for progressive engine dealers and boat builders in unoccupied territory.

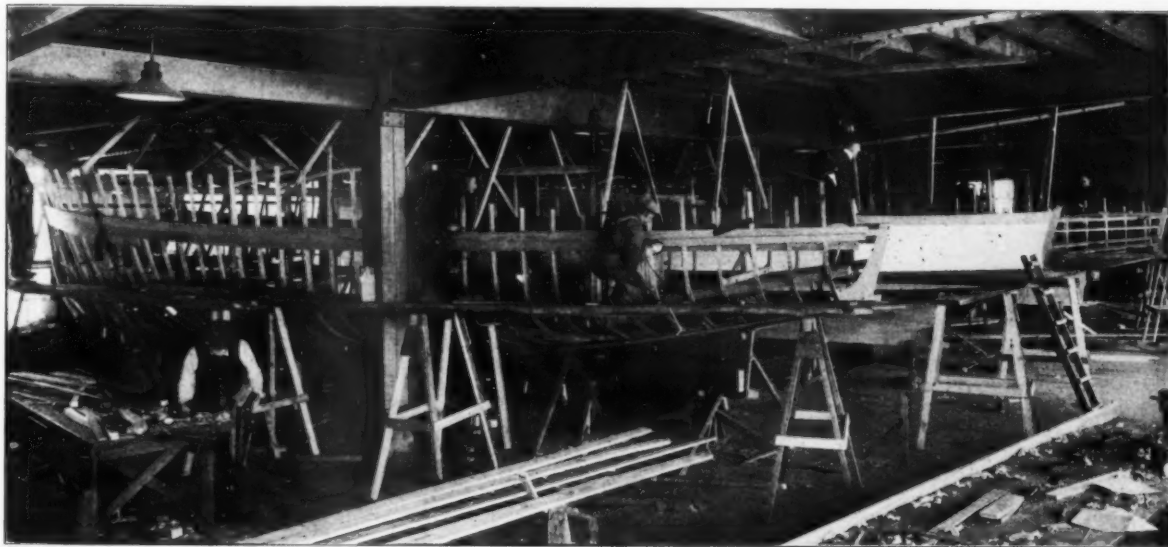
Scripps Motor Company

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The STANDARDETTE—38 Footer



Real standardized quantity production of the STANDARDETTE improves the quality and cuts the cost. We are also able to furnish complete knockdown parts of the STANDARDETTE at very attractive prices to any builder or owner who prefers to handle the construction.

Specifications and Equipment —STANDARDETTE— 38' x 10' x 3'

FRAMES: White oak, 1½" x 1½", steam bent.

PLANKING: Yellow pine, ¾". Fastened throughout with 1¼" No. 14 brass screws.

RAISED DECK: Tongue and grooved white pine, ¾". Canvas covered.

AFTER DECK: White pine, caulked deck paved with black marine glue.

AFTER HOUSE: Mahogany, with swing sash. All skylights are mahogany.

TOILET ROOM: Contains linen locker, medicine locker, mirror, wash basin and toilet, towel bar, soap dish, and paper rack. All fixtures are nickel plated, manufactured by J. L. Mott Iron Works.

SALOON: Settee forming two extension berths, and two swinging berths forming back of settee. Accommodations for four people. Two large clothes lockers and baggage space. All upholstery hair filled, covered with cretonne. Floor covered with carpet.

PORT LIGHTS: Six, 6", opening in clear.

GALLEY: Door to galley has full length mirror forming panel, fitted with Bommer double swing hinges. Two-burner stove, enameled sink 12" x 18". Compression faucets, etc. nickel plated, with running water throughout. Supplied with 100-gallon galvanized water tank. Lockers for dry stores and galley utensils. Floor covered with linoleum.

ICE BOX: Will accommodate about 75 pounds of ice.

AFTER DECK HAND RAIL: Mahogany, with hinged opening at companionway.

BOARDING LADDER: Mahogany, with rubber treads.

FORWARD RAIL: Brass stanchions, with ¼" galvanized wire rope.

ENGINE ROOM: Two settees, with storage locker underneath; upholstered with hair filled pantasote cushions. Also tool lockers, etc.

POWER PLANT: Kermath Model 35. Bore: 4¾". Stroke: 5½".

ELECTRIC EQUIPMENT: Electric lighted throughout, including running lights and masthead.

FUEL TANKS: Two tanks, galvanized, 18" diameter by 42"; total capacity 84 gallons, with a cruising radius of 250 miles, with sufficient space for 84 additional gallons, if desired.

JOINER WORK: Interior is white pine, with ¼" Haskelite panel work throughout.

PAINTING: Interior—Finished French gray throughout. Exterior—All mahogany work varnished. Hull—Top sides white. Bottom—Green.

RUDDER: Bronze.

SHOE: Bronze.

AWNING: Khaki awning furnished complete.

AWNING STANCHION: ¾" galvanized pipe.

STEERING WHEEL and QUADRANT: 20" diameter, mahogany, with patent steerer and control. Manufactured by Justus Roe Co.

WINDLASS: American Engineering Co. motorboat electric windlass.

ANCHOR: 80 lb. galvanized swivel anchor, and 60' ¾" diameter rope.

COMPASS AND BINNACLE: Negus or Bliss.

BELL: 8" polished brass.

SIDE LIGHTS: Galvanized. Size class No. 2.

LIFE PRESERVERS: Six.

FIRE EXTINGUISHERS: Two.

FLAG POLES: Two, mahogany.

FLAGS: U. S. Jack and yacht ensign.

FOG HORN: Galvanized, 24".

BOAT HOOK: One galvanized, with 6' ash pole.

DECK PLATE: Polished brass, 18" diameter, to lazarette. Polished brass, 14" diameter, to chain locker.

STERN CHOCKS: Two, 7" polished brass, open pattern.

BOW CHOCKS: Two, 7" polished brass, open pattern.

STERN CLEATS: Two, 8" polished brass, hollow pattern.

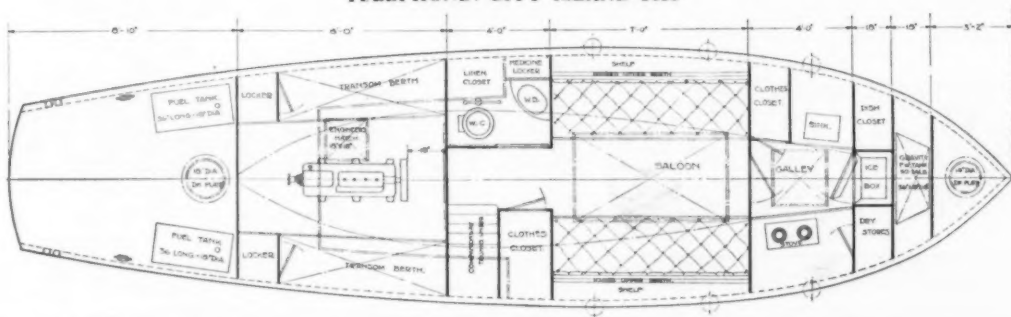
BOW BITT: Oak, 2½" square, with brass cover.

CONTROLS: Entire operation controlled from deck at steerer, including electric starter.

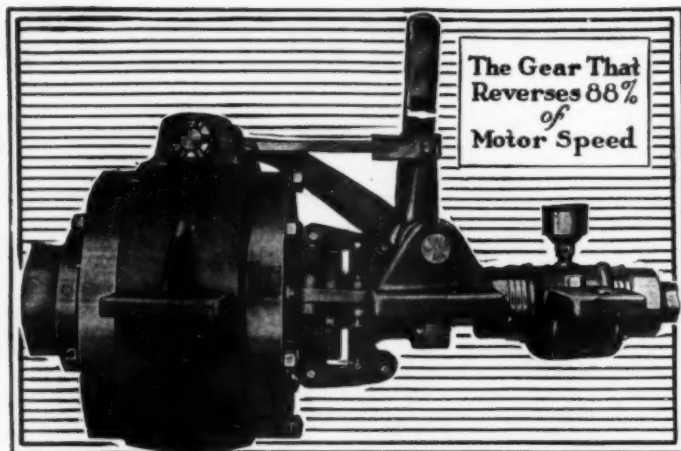
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Read what the Manager, Mr. Bird Says:

"Having used your Joes Gears for the past ten years or more on our different types of Knox motors, ranging from 3 to 50 H.P., we consider it only right for us to advise you that your gears have proven out very satisfactorily. In fact, we do not know of one dissatisfied customer. Considering the fact that our motors are of the heavy duty type; many of them used in small tug boats for towing logs for different lumber companies, which in our opinion is the hardest work a gear could be subjected to, we consider the results obtained speak very high for your product.

Very truly yours,

CAMDEN ANCHOR ROCKLAND MACHINE CO.

(Signed) John Bird, Manager

Please Note:

This letter is the fifth of a series. Copies of previous letters can be obtained upon request. Watch our advertisement next month for the reason why Joes Gears are standard on *Packard Gold Cup and Sweep Stakes engines*.

—put it up to old man joe

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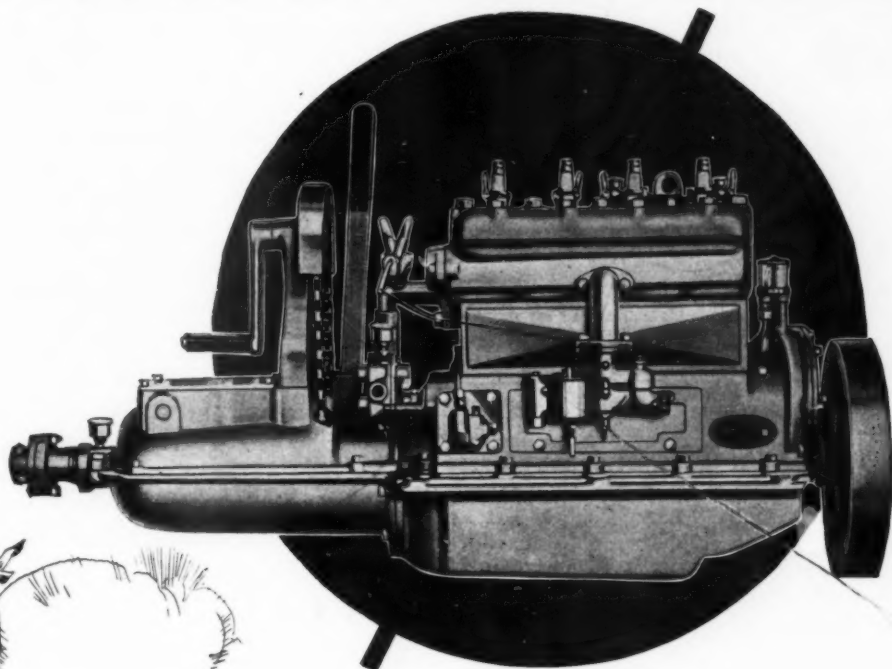
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JOES FAMOUS GEARS

REVERSE 80%-88% of MOTOR SPEED

STANDARD OF THE WORLD — FOR BOATS UNDER 30 FEET



out beyond your "Three mile Limit"

OUT beyond the "three-mile limit" on that lake of yours—out where you're "on your own"—all the beautiful charts of brake horsepower and torque in the world become empty figures.

You want to *know* you're motor-right! You want to *know* that under the forward hatch, or aft, you've got a motor that's 100 per cent dependable.

Universal is first choice among boat "fans" who like to leave the home wharf far behind. First choice, because it makes no pretensions of being other than the simplest, grittiest, sturdiest "four" that our 23 years of motor building have taught us to make.

"4"
CYLINDER

BE sure you mention size and type of boat you're figuring on. You've a pleasant surprise awaiting you in Universal's reasonable prices.

Atwater-Kent igniter or Bosch magneto; self-starter if you wish; eight distinct variations of assembly to choose from—but only one motor. Economical. Accessible.

Also makers of the famous Universal-Unimote 2 K.W. to 25 K.W. Electric Lighting plants for BOAT LIGHTING, camps, summer and suburban homes, farms, theatres, etc. Ask for catalog.

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UNIVERSAL MOTOR CO. 40 Ceape St. MILWAUKEE, WISCONSIN

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IF you want a classy little runabout that is a happy combination of speed boat and general utility launch, you'll look a long way without finding an equal to our standardized 21-ft. "SPORT" model. It has a 30 h.p. Buffalo or Kermath engine, complete with electric starter, and makes over 17 miles an hour. Seats five with real comfort, with room for a couple of chairs too if you wish.

Or maybe you'd prefer the 26-ft. MOGUL which is powered with any engine you want, according to the speed required. Any high speed engine from 30 h.p. to 200 h.p. will give good results in this hull.

The Dachel-Carter standardized types include not only the Sport and Mogul models, but also outboard motor boats, rowboats, and hydroplanes. Our plant is equipped to build to your order anything you want in the way of a cruiser, runabout, sailboat or commercial boat of any size up to 125 feet, in steel or wood.

We have been building good boats for a quarter of a century and our facilities are the most complete in the Central West. Let us quote on your requirements if you don't find what you want in our standardized types.

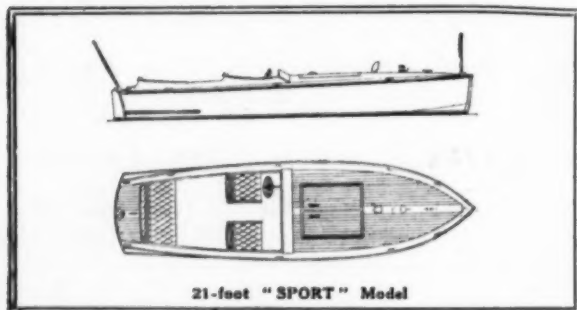
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DACHEL-CARTER BOAT CO.

General Sales Office: 53 West Jackson Blvd., Chicago

Boat building plant at Benton Harbor, Mich.



How Chaos Came to Bayside

(Continued from page 122)

Between agonizing periods of speculating how we were going to navigate the East River under sail, we thrilled with wild elation to the superb behavior of the boat.

We had worked through the Narrows at Governor's Island and were easing our sheets a trifle for a reach round the Battery when a deadly squall screeched out of the cañon of Broadway and burst upon us with sledge hammer force. Over it heeled us, over until water buried the lee rail, but only for an instant. Like a wet terrier Chaos shook it off and sped forward through the smother; heeling but scorning to slish her decks with the harbor slime.

Close-hauled again, we began our spectacular beat up the East River. Round us the kaleidoscopic harbor life eddied bewilderingly. Tug-boat skippers eyed us curiously, ferry pilots stared as their crowded arks shaved our bumpkin or bowsprit. Car-floats threatened to converge and crush us. Rip Van Winkle returning home after his jag in the Catskills could have presented no greater an anachronism than Chaos navigating the East River under sail. It was absurd, and yet there was a splendid exhilaration about it!

We passed under the first bridge, giddily high, its steel cables appearing like the web of a fish net, its clamorous roar and whine and clash and rumble showering upon us in breaking waves of sound that mingled with the diapason of steamboat whistles, throbbing engines, and the clank of ferry chains.

By five o'clock we realized that any hope of carrying the flood to Hell Gate was futile. High above us the windows in the grim stone towers flamed in the sunset. The dying breeze yet had strength to give us steerage way and we edged slowly in toward the foot of Twenty-third Street, where a coasting schooner had dropped her hook.

As we drifted by her a dog scampered back and forth on deck barking joyously. "How much water you got there, captain?" I called to a ragged-looking chap who leaned his elbows on the taffrail, smoking moodily. "Four fathom," he replied and relapsed immediately into contemplative silence.

We ran just inside the schooner and let go our port anchor. The chain rattled through the hawse and kept rattling—four, five, six, seven fathoms straight down like a plummet. Eddie and I stared stupidly until at ten fathoms the stopper in the locker checked the sickening flow. Up and down and pendulous hung that chain. *With ten fathoms out we couldn't get bottom in the East River!*

There are moments even in the strongest man's life when he feels like sitting down and blubbering over the futility of everything. Eddie and I shared one of them when we beheld the spectacle of that useless mud-hook.

Our next act proves the irresponsible state to which this incident had reduced us, worn to a frazzle with the unwanted exertions of the cruise. Failing to draw the very obvious conclusion that we were over a deep hole, we let go the starboard anchor in a sort of frenzied desperation, though there was not the least cause for alarm, being slack water and dead calm.

We had a twenty-fathom cable on the starboard bower and when eleven or twelve fathoms had coursed unmusically through the hawse there seemed to be some slight evidence from the feel of the chain that we had at last got bottom. Thereupon we began laboriously to heave in the port anchor, but while engaged in this back- and heart-breaking task a suave remark from the pilot house of a passing tug smote upon our ears like a death knell. "You won't get no bottom there, boys!" The tone was patronizing, tolerantly amused, curiously maddening.

Twilight floated down the river with twinkling lights, green, red, and white. Stark chimneys, like gigantic minarets, black against the pale sky, gushed flame. Ceaseless, throbbing like the hollow diapason of surf along sea beaches, the voice of the city enveloped us.

With the recklessness born of fatigue and abysmal despair we defied the admonition of the tug captain and did not attempt to shift our anchorage in a search for the elusive river bottom.

With my last ounce of strength I hung a riding light in the starboard rigging while Eddie pulled achingly ashore for provisions. (Except for a few sea biscuits we had eaten nothing since breakfast.)

It being Sunday night the result of his foraging was negligible, amounting only to two ham sandwiches of doubtful aspect which, together with a few uncertain eggs, was the most he had succeeded in garnering from a lately metamorphosed saloon. But ambrosia, that well known food staple of the Olympians, could have tasted no sweeter to us than those stale ham sandwiches. The eggs we saved for breakfast.

Then, having devoured to the last crumb our humble fare, we stretched out on the faded green transom cushions and—well, I faintly remember hearing the wash and clamor from a tug that, judging from our instant motion, must have passed perilously close . . . but absolutely nothing more than that

(Continued on page 130)



This symbol is your guarantee of satisfaction

THE NEW AND IMPROVED **L-A** ROWBOAT MOTOR

Propels your boat anywhere it will float

THINK of it—anywhere a boat will float the new and improved L-A Rowboat Motor will drive your craft. In water ankle deep, over submerged rocks, sand bars, snags and deadheads, the L-A will take you there and back, without damage to your boat—without damage to your motor. It is double proof against stones, snags, deadheads.

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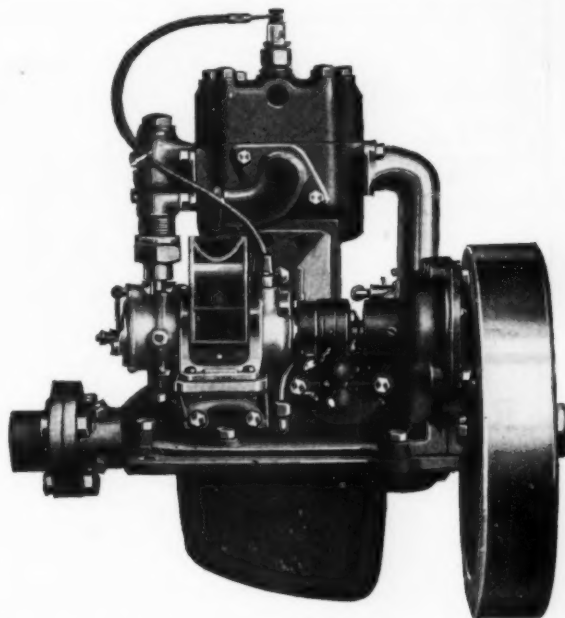
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Standard Equipment

Double-duty, built-in flywheel magneto; Easy rope starter; self tilting device; Safety propeller (patent applied for); Cast aluminum, indestructible gas tank. The new L-A Rowboat Motor offers a remarkable value—investigate it early.



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ADOPED as standard equipment for 1923 by the largest boat builders and distributors in the country. —Built around Ford Sized Parts—replacements anywhere. —Equipped with Bosch High Tension Magneto, Impulse Coupling and Stopping Button.—Speed Range 300 to 1000 revolutions per minute.—Weighs approximately 165 pounds. —Price complete, \$117.50, F. O. B. Jackson—with Joe's Reverse Gear, \$157.50—This is the motor you have always wanted.

Write today for full particulars

Including complete description of these exceptional features: Counterbalanced crankshaft—Special breather pipe—Liberal main bearing surfaces—All bronze water pump with stuffing nut—Bronze eccentric strap—And many others.

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Dealers—Some good territory still open

LOCKWOOD-ASH

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Builders of Marine Engines for 20 Years

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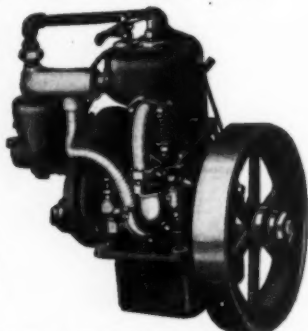
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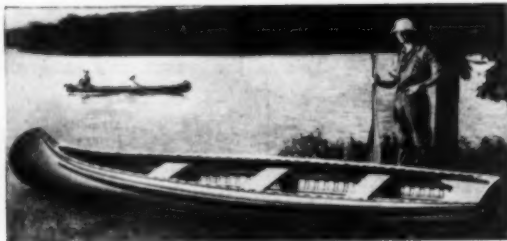
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386 Middle Street, Old Town, Maine, U. S. A.

How Chaos Came to Bayside

(Continued from page 128)

impinged upon my consciousness until I batted both eyes in the brilliance of the morning sunlight that streamed through the open hatch. A night of blissful oblivion had followed that day of mingled hope and despair, victory and defeat.

Monday morning. Blue Monday in the offices and blue, with a different significance, upon the sea. "Bayside or bust" was our firm resolve as the new day breathed its golden encouragement into hearts which had only been badly bent, not broken.

Bravely we phoned our respective bosses that "circumstances over which we had no control" rendered necessary our being A. W. O. L. for the duration of the day, cheerfully we weighed anchor and, moving with the young flood, spread our sails to the faint southerly air that struck in vagrant ripples of azure on the silver river.

"*Facilis est descensus in Averno*," but it's a damned hard job to get through Hell Gate!

Under sail alone, despite a favoring wind and tide, it requires not only a marked degree of nerve and skill, but a knowledge of the whimsical counter-currents. Very often, too, there is considerable error in the computation of ebb or flood, and only an East River pilot or the captains of the Sound steamers are sufficiently familiar with the moods of this unique navigational chimera to effect their passages with infallible judgment.

Nevertheless we determined to tackle the Gate under sail, trusting in the tide to sweep us through and in the wind, which we fancied must soon breeze up, to give us steerage way. I really believe we would have done it if the wind hadn't failed us, but as it happened old dame Atropos clipped that chapter from our biographies.

The tide was fetching us along prettily enough and there was sufficient air to give us hope of more when close aboard to port, overhauling us, appeared a plebeian little tow-boat, green and white and very dirty. From her dumpy pilot house leaned a man who with his somberly seedy habiliments fitted my idea of an impoverished undertaker. (Let me hasten to add that I have never seen an impoverished undertaker, nor do I believe such exist except in the imagination.)

Scrutinizing us with a glance in which faint amusement mingled with an acquisitive glimmer, he ventured, "I'll tow ye through fer ten dollars, boys." We laughed our contempt.

He continued, signalling for slow speed so as to keep abreast of us. His tone was friendly and rather serious now. "Look here, boys, you'll never make it under sail. You'll fetch up agin' that thar dredge as is anchored in mid-stream."

"Not a chance!" I answered, attempting light nonchalance, but with hollow success. He had me worried. I was bubbling with enthusiasm when Eddie suggested, "Offer him a five-spot." We did so, and we got a heavy tow-line in return. A moment later when we entered that cruel, sucking, cross-purposed maelstrom we thanked our lucky stellars that discretion had once more handed the K. O. to valor.

The tide was still ebbing, despite our careful computations, and there wasn't a breath of wind. Furthermore the uncompromising dredge was, sure enough, moored in nearly mid-channel. Had we attempted the passage under sail this yarn would have been unbelievably thrilling or unwritten, and the writer would have a swelled head or a swell headstone, accordingly.

Let no one suppose that I am unprepared to be deluged with instances of people who have sailed through Hell Gate and found the experience only mildly exhilarating.

There are always such people. They usually confine themselves to borrowed boats, automobiles, airplanes, and what not. They keep the cemeteries green. Not content with having helped us through this perilous passage our dirty little *deus ex machina* presently warped us lovingly alongside and her captain, having summoned a deck hand to replace him at the wheel, came to the wing of the bridge whence he surveyed us with the proprietary air of a buccaneer who had his grappling irons securely fixed in some rare prize.

He motioned Eddie aboard and for an awful moment I suspected that he might attempt to bully us into paying a ransom for our release. But, it developed he was actuated solely by benevolent motives. Pointing out to Eddie that there was hardly a breath of air, he suggested that he continue to tow us, as he, too, was bound in the direction of Little Neck Bay, hoping to pick up an inbound schooner. I think he must have had a conscience upon which that easily earned five-spot weighed heavily.

We much preferred to sail, of course, but hesitated to decline an offer so magnanimous.

There seemed to be a great deal of innocent merriment afoot in the inwards of the tow-boat. Ever and anon some hard-boiled egg would pop out of the back door (she was built like a house) to grin tipsily at us, and another bottle would splash astern. These simple harbor folk are so easily amused! The

(Continued on page 136)

Positive Proof of Consistent Dependability

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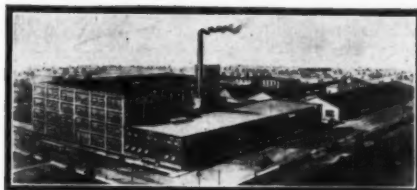
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The Piston
RING COMPANY
Muskegon, Michigan

Ruth, A Smart Fisherman's Cruiser

(Continued from page 114)

space above to be fitted with a suitable door and necessary hardware, and can be arranged with racks for fishing poles on each side. There will be a moulding on the outside of the coaming in line with the cabin house. The after end of the cockpit is to have a door which can be fastened with screws or catches, to provide access to the space under the after deck. The back of the cockpit will be of $\frac{3}{8}$ -inch mahogany extending above the deck as per plan. To be securely screw fastened and provided with a $\frac{1}{2}$ by $1\frac{1}{4}$ -inch cap. The cockpit is to be made self bailing and provided with two lead pipe scuppers at the after end of 2-inch pipe. These are to be let in to the floor, so that they will be flush with the decking. A suitable binnacle box and steering wheel support is to be built of $\frac{3}{8}$ -inch mahogany and of the dimensions shown and located as per drawings. The side covers can be arranged to be removable for inspection of interior. All instruments, gauges, etc., are to be mounted on this stand.

A step of about 15 inches width should be provided to the raised platform, which may be either permanent or removable.

Fuel tanks: Suitable saddles are required to hold a 24 by 30-inch seamless steel tank on each side at the stern. They are to be clamped in place with $\frac{1}{2}$ by $1\frac{1}{2}$ -inch galvanized iron straps on each side. Tanks are to be painted with red lead or asphaltum, and to have a double ply of canvas between the tank and straps, either leaded or marine glued.

Finishing and painting: The finish of the hull has been previously covered. All interior work to be thoroughly cleaned and the cabin sides to be finished natural, both inside and out. All seat fronts, doors, partitions, in fact all interior work, to be properly filled with best wood filler, followed by three coats of Valspar, which should be well rubbed down between coats. The interior finish may be cypress or pine with mahogany trim. In this case, the partitions except the bulkheads, may be of cypress, and the casings, etc., of mahogany. The seat frames can be of mahogany and the panels cypress, and finished either in the natural or white enamel. Lattice work to be finished in the same way. The cabin roofing is to be of perfectly clear stock and finished in the natural with the beams. All flooring and work which is to be covered is to have two coats of lead paint. Canvas is already specified and all canvas throughout should be treated in the same way. The color to be as selected. The cockpit finish will be natural, filled and varnished in the same manner, as the interior. Covering boards, if natural, to be filled and have three coats of varnish.

Hardware and fittings: The stem will be protected with half round galvanized iron, well painted, and extending at least 4 feet under the waterline. Suitable anchor chocks will be provided on the forward deck to fit anchors supplied. An oak bit post of 4 by 4-inch oak, shaped and installed as per plans. Furnish and install a deck plate to lead lines under the deck and an 8-inch deck plate for a harpoon line. A pocket is to be installed to receive both. There will be three 8-inch cleats on each side for fenders or tying. A suitable hand rail should be installed on deck house to reach aft to the break water. This may be either of the wooden type, or of standard deck fittings, and $\frac{1}{2}$ -inch galvanized iron pipe. One standard 5-inch galvanized cowl ventilator will be installed on the deck. A bronze strut, as called for on the drawing, to be through bolted to the keel with at least eight $7/16$ -inch bolts. A bronze shoe and rudder of the dimensions called for with a $1\frac{1}{2}$ -inch stock, extending through a bronze stuffing box and attached to a model B Kainer steerer shall be supplied. Connect the steering wheel to the steerer with galvanized pipe, as is specified by the Kainer Company. A steering wheel with wooden spokes is to be furnished and independent engine controls attached to the steering stand. There will be two 12-inch cleats on the after deck and a 6-inch chock on each side. There will be a guard rail on the after deck made up of standard stanchion fittings and not less than 4 or 5 inches above the deck. A suitable bilge pump shall be installed and connected to the lowest part of the boat between stations 4 and 5. Fourteen round port lights as specified previously. Install a set of regulation running lights of proper size similar to Fig. 1606-Ex, G. B. Carpenter's catalog. A no-bind stuffing box suitable for $1\frac{1}{4}$ -inch bronze shaft shall be supplied and any other equipment which may be specified by the owner.

Lighting and wiring: The boat is to be wired for electric

lighting throughout in a first class manner. A suitable gang switch with a sufficient number of gangs is to be furnished so that each circuit can be properly taken care of. An automatic cut-out should be installed in the main circuit. There will be an independent circuit for each of the following groups: one for the bow and side lights, one for the after range light, one for the cabin lights, and one for the cockpit lights. The fixtures in the main cabin may be of the dome type, two to be installed on the center line. A similar light will be required in the toilet room and one on each side in the galley. If desired, four lights may be installed on the main cabin, two on each side, or another alternative, one large dome in the center and a wall type pull chain socket on each side on the forward bulkhead. There will be a steering light in the binnacle box, and a plug connection for a spot or search light. All wiring is to be made with No. 14 brewery cord or metal bound wire, with soldered joints. This is to be concealed by suitable mouldings. The engine wiring is to be made up in a first class manner, following the directions specified by the engine manufacturer.

Awning: An awning frame is to be built up of standard rail fittings of the ball type, and of $\frac{3}{4}$ -inch galvanized iron pipe. The frame is to be bolted to the deck and stayed on the sides. It will appear approximately as indicated on the profile. The top pieces will be bent to about a 10-inch radius at the edges and follow the crown of the deck. When finished they are to be covered with strips of oak or pine, $\frac{3}{8}$ by $1\frac{1}{2}$ inches secured to the pipe with pipe clamps, screw fastened to the strips. The covering is to be of 10 oz. khaki duck, and provided with side curtains and celluloid lights. Side curtains should be made to roll up on the sides and all work should be carefully sewed and finished throughout.

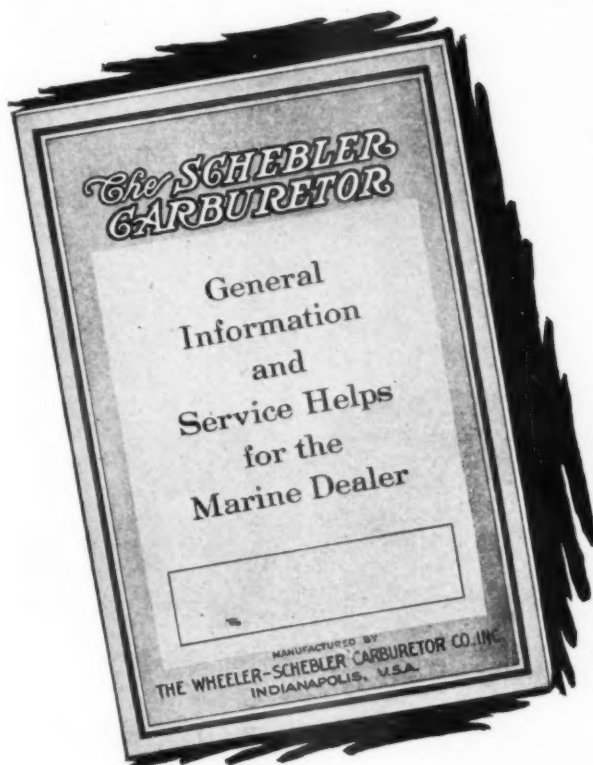
Windshield: Install a $\frac{3}{4}$ -inch mahogany frame to extend across the central 5 or 6 feet of the boat. This is to be divided into two or three panels and to be fastened to the break water with brass cleats. A tubular brass bracing strip should be installed on each side to support the shield from the front. Frames for the glass are to be rabbetted properly to take $3/16$ -inch plate glass. The top member of the frames is to be removable so new glass can be inserted if required. This piece is to be doweled and fastened into place with brass plates, and the entire shield is to be neatly finished in the natural.

Motor installation: The shaft alignment and engine foundation called for on these drawings is for the model D35 four cylinder Kermath motor. This is to be properly aligned and coupled to a $1\frac{1}{4}$ -inch bronze shaft, securely lagged or bolted to the bed. The exhaust gas to be carried off through copper tubing and extend through the transom at the stern. Fit a neat brass or copper ring over the tube, packed with asbestos wicking. A portion of the engine discharge water should be permitted to run through the exhaust pipe, feeding in through a $5/16$ or $3/8$ -inch tube. Gasoline to be supplied through $3/8$ -inch annealed copper tubing to a large size Stewart vacuum tank, flowing from there to the motor by gravity. A suitable strainer should be installed next to the carburetor, and all tubing and fittings to be of the same size. The two tanks should be connected to a T in the center with a globe valve at each tank and an additional one at the bottom of the vacuum tank accessible from the cabin.

All water connections should be made with bronze fittings, and a rubber hose between the sea-cock and the overflow. All joints to be well clamped and leaded before tightening. The control is to be made up with standard type fittings and to be installed on the steering housing. It is to be connected with ball joints and brass rods so as to operate freely. The clutch control to be extended or otherwise arranged so that it will operate readily from the steering position. The installation as a whole is to be executed in a first class manner and to the satisfaction of the owner. A three blade propeller 19 inches in diameter and 16 inches pitch should be installed and the strut at the stern should be babbitt lined.

General: The builder will furnish a suitable dish rack adapted to the dishes to be used by the owner. All equipment not otherwise specified should be agreed upon between the owner and the builder and included in the contract. The object of these plans and specifications is to construct a cruiser which will be complete and ready to operate. Anchors, lines, and such other equipment as is required by the regulations, can be supplied by the owner or by the builder as agreed.

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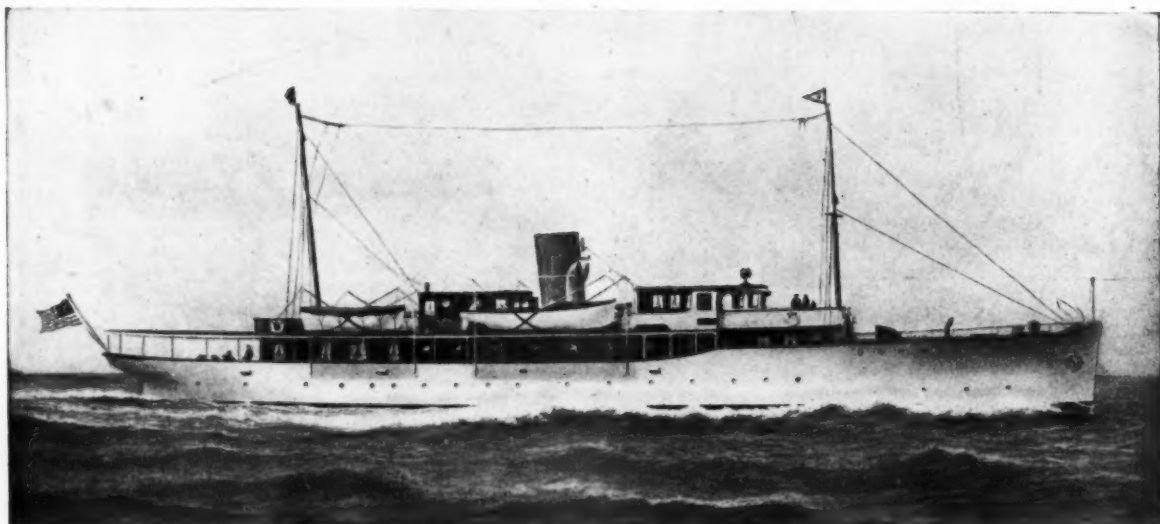
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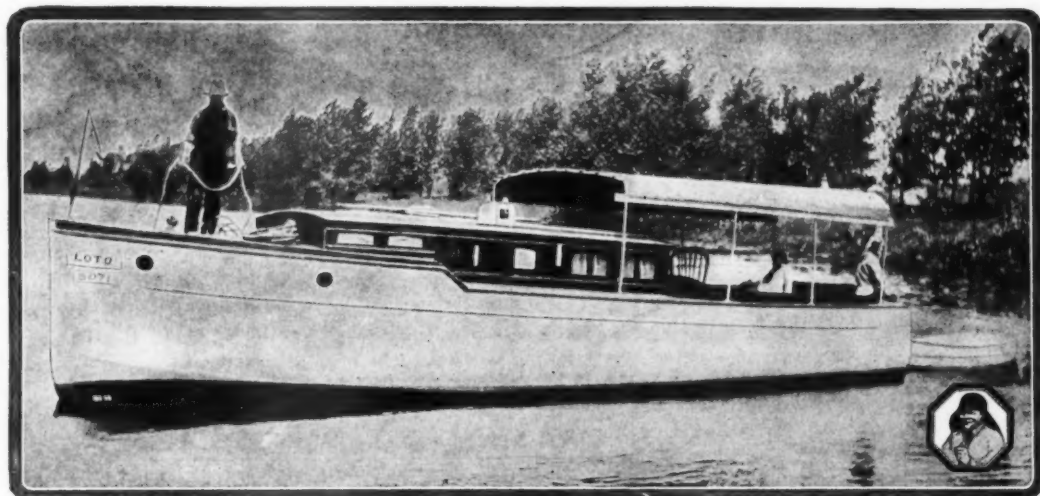
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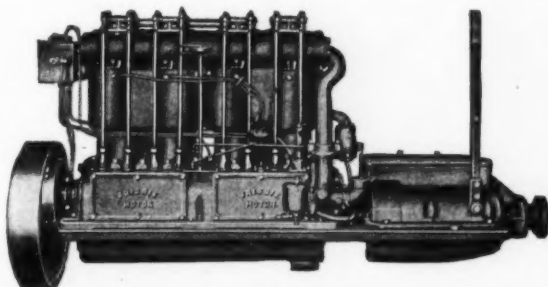
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MULLINS BODY CORPORATION

Boat Department 665 Depot Street, Salem, Ohio.

How Chaos Came to Bayside

(Continued from page 130)

captain found it necessary to make frequent trips to the after cabin whence he returned on each occasion looking more benevolent than ever.

An approaching steam yacht gave us an excuse to part company with our benefactor, who, while emotionally disturbed at the prospect, yet saw the justice in our contention that her wash would grind us together with dire consequences.

A light breeze springing up with accommodating suddenness, we proceeded to reel off the blue miles of a pleasant beat to windward that ended a few hours later in Little Neck Bay, which is as shallow and beautiful as a bobbed haired flapper, 1923 model.

We stood bravely in for the white spot of the club house and the clustered boats near by, having been assured by the friend who was putting us up at the club that he had kept his seventy-foot yawl, which drew nine feet, within a half mile of the regular anchorage, and that it was his custom, except when the tide was high, to sail nonchalantly in until she fetched up on the soft mud.

We followed his directions, "keeping the factory chimney in range with Stepping Stones Light," but when we hit the ooze, which we did, with a sudden unctuous sensation, the club house looked a good mile away and seemed double that distance when we came to row it.

We spent subsequent week-ends cruising aboard Chaos, and not until a late November norther chilled our enthusiasm did we lay her up for the winter.

The following spring Chaos became a unique, comfortably appointed bachelor apartment. The huge ice chest had been replaced by a clothes closet, in which reposed our sartorial wealth complete from dungarees to dinner coats. Two bunks, sufficiently raised above the transoms to accommodate roomy bureau drawers beneath them, had been built into the main cabin abaft the skylight and on either side of the main hatch. There was ample room to accommodate two additional persons on the transoms forward of the bunks. In the galley a little Shipmate's range enabled us to pursue a more or less wabbly course in domestic science morning and evening.

We commuted to the city every day and are living examples of the fact that, even though he sweat in the bondage of New York, there is no young man with a passion for blue water who may not gratify it if he will.

Chaos is a relic, a very wonderful relic, of the cutter era. Designed by L. H. Phillips, she was built by W. B. Smith at his famous yard in South Boston in 1890. Owned for many years on Long Island Sound, she was used chiefly for racing, until, with her rig changed to that of a yawl, she made several cruises, notably one to Bermuda. She is as sound today as when she clef her christening champagne. White oak, mahogany and teak, a hard combination to beat, were used in her construction. Chaos has little competition from boats of her class.

Good Qualities of Many Woods

(Continued from page 118)

light brown color and very brittle; has a fine close grain and will take a good polish; hard to work, shrinks, warps and twists very badly. It is not good material for joiner work or general carpentry. Best adapted for veneer work when used for interior trim. Weighs about 35 lbs. per cubic ft.

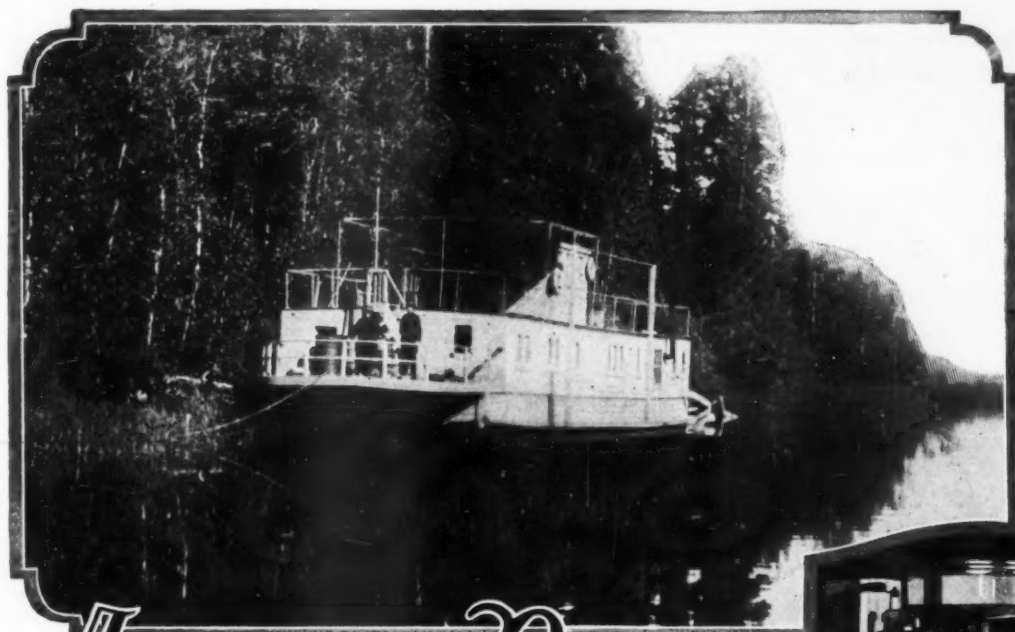
Mahogany. A hard, close grained wood, difficult to split and takes a high polish. In color, it is a deep rich red; works nicely in joiner, cabinet or furniture work. An excellent wood for all classes of yacht trim, deck houses, planking small boats and the better class of joiner work. Weighs about 46 lbs per cubic ft.

Teak. A heavy strong wood found in India. Is a yellowish brown color and is straight and even grained; does not split or warp easily and is very easily worked; an excellent material for decks, railings, deck and hatch margins, etc. Used in the very highest class of yacht work. Weighs about 50 lbs. per cubic ft.

Lignum-Vitae. An excellent hard, close grained wood; dark brown with lighter brown markings; very resinous and difficult to split. Used for lining of outboard shaft bearings, sheaves for blocks and similar purposes. Weighs about 68 lbs. to the cubic ft.

While any of the preceding are suited to many purposes it will be found that white oak is generally used for keels, frame members and engine foundations; yellow pine for sheer clamps and ribbands and the first one or two planks below the sheer line; cedar and cypress for the general run of planking. For trimming, quartered oak, and mahogany are the principal materials used. On less expensive work, cheaper wood like cypress is extensively used for trim. Decks are made of white pine and if canvas covered, yellow pine will do nicely.

A. P., Pelham, N. Y.



Another Proof of Marvelous Power

Here is a letter recently received from P. J. O'Gara of the American Smelting & Refining Co., Salt Lake City, Utah.

"Last year, through George B. Carpenter & Company, Chicago, Illinois, I purchased a Johnson Outboard Motor which has given satisfaction beyond all expectation. This light but sturdy little motor is the only one of a large number of motors that I have owned that has really met requirements. Even under the most severe conditions it has never given me the slightest trouble.

"While you do not advertise it as a power plant for a tug, I would like to tell you that I towed my large 72-foot houseboat, a 30-ton craft, with this little engine. I am enclosing photograph of my houseboat 'Admiral' indicating just what the little motor was up against. The houseboat is under her own power, but when the power 'went off' I hooked the Johnson on to a line from the bow and we kept going just the same."

You wouldn't believe so much power could be put in such a small, handy package—only 35 pounds complete. It gets under action so quickly, does away with all hand rowing, makes fast shore trips, darts in and out of crowded harbors "like a waterbug," puts the final touch of power to your outfit. And then in a pinch if necessary it will surprise you with its "tug power" on a dinghy or tender for towing your larger craft.

When not in use the Johnson takes apart easily for packing in a handy steel case about the size of a suit case—to slide under bunk or other out of the way place.

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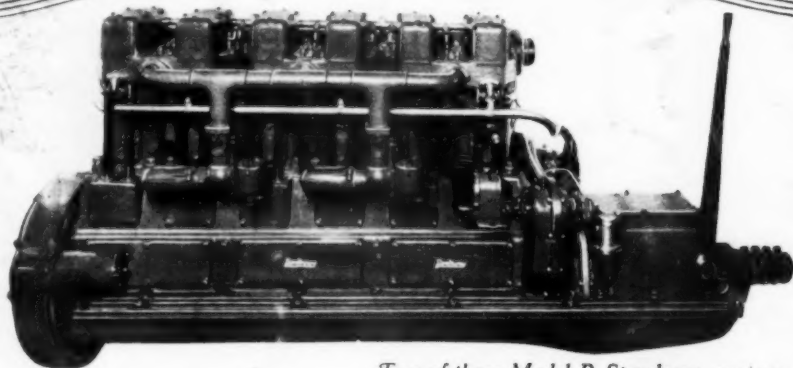
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